Railway Age

Better railroading through R&D:

The track structure

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1992 Commuter Railroad Planner's Guide

November 1991

Railway Age

Incorporating Modern Railroads

1992 COMMUTER RAILROAD PLANNER'S GUIDE

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Market Outlook

Equipment

Amtech: Received initial orders totaling more than $3 million for automatic equipment identification (AEI) tags following the AAR board's Sept. 27 approval of mandatory AEI tagging, to become effective Jan. 1. (*RA*, Sept., p. 22). There will be a maximum implementation period of 30 months ending June 30, 1994, under which all cars and locomotives operating in interchange service in North America must be tagged. Each piece of rolling stock needs two tags. Reader systems must also be installed.

Southern Pacific: Has entered into a three-year $150 million agreement with the Greenbrier Companies for the refurbishment of 9,000 freight cars for SP's newly established "Golden West Service" fleet. Included in the order are boxcars, covered hopper cars, open top hoppers, gondolas for steel and wood chips, mechanical refrigerator cars, and flat cars. Greenbrier President and CEO William A. Furman said the order "means steady employment for about 250 workers at Gunderson and other car shops in Oregon and around the country. It also means Greenbrier and Gunderson are involved in providing a new fleet of high quality rail equipment which will serve important shippers throughout the Northwest and elsewhere."

Facilities

Union Pacific: Placed an order with Video Masters, Inc. for an additional 17 automatic equipment identification (AEI) systems, for a total of 33. Included are stand-alone, hybrid video, and intermodal type systems.

Southern Pacific: Awarded a contract to Morrison Knudsen to design and build a 100,000-square-foot, intermediate locomotive repair facility at Colton, Calif. The project will take around 16 months to complete.

De Leuw, Cather International: Signed a contract with the Kaohsiung Municipal Government, Taiwan, establishing De Leuw, Cather International as general engineering consultant for phase one of the $6.5 billion, 78-km Kaohsiung Mass Transit System. Subconsultants on the project team include Parsons Brinckerhoff International, Electrowatt Engineering Services, KCCT International, and Dames and Moore. First segments of the Kaohsiung system are scheduled to open by 1996.

Honolulu International Airport: Awarded a contract valued at $100.8 million to AEG Westinghouse Transportation Systems for an automated people mover system connecting existing buildings at the airport with two new terminal buildings. AEG Westinghouse has so far installed 12 people mover systems worldwide, nine of them in airports, and has four others under construction.

Conrail: Will build a new, $25 million data center off Roosevelt Boulevard in northeast Philadelphia to replace an existing facility at 15 North 32nd Street and a support facility in King of Prussia. Now under design, the 100,000-square-foot facility will be constructed on land acquired from the Philadelphia Industrial Development Commission. It is to be ready for occupancy in late 1992, housing all of Conrail's large-scale computers, auxiliary equipment, and various communications network monitoring equipment, and employing approximately 200 people.

Revenue freight carloadings

Commodity	Oct. 12 week	Oct. 5 week	Sept. 28 week	Sept. 21 week
Grain	30,109	31,901	29,372	28,562
Other farm products	2,441	3,032	2,605	1,871
Metallic ores	14,193	16,685	18,087	16,983
Coal	131,499	127,570	133,384	132,021
Crushed stone, gravel and sand	15,534	15,003	14,751	14,860
Nonmetallic minerals	9,801	9,720	9,593	9,447
Grain mill products	9,778	9,895	9,937	10,061
Food and kindred products	9,152	9,239	9,460	9,315
Primary forest products	9,316	9,303	9,596	9,259
Lumber and wood products	5,120	5,175	5,999	5,678
Pulp, paper and allied products	9,816	10,196	10,151	10,096
Chemicals and allied products	28,911	28,855	29,038	27,803
Petroleum products	5,275	5,057	5,544	5,150
Stone, clay and glass products	9,654	9,870	9,671	9,777
Coke	5,270	5,365	5,261	5,436
Metals and products	10,770	9,320	11,043	10,200
Motor vehicles and equipment	18,095	17,835	19,593	18,821
Waste and scrap materials	8,768	8,807	8,836	8,892
All other carloads	7,017	7,549	8,318	7,396
Total Cars Loaded	**340,519**	**341,377**	**350,229**	**341,718**
% change from previous year	.4	(2.6)	2.4	(1.7)

		% change
Cumulative total: 41 weeks	13,141,792	(5.3)

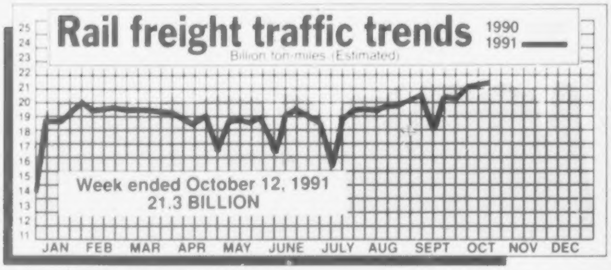
	Oct. 12	Oct. 5	Sept. 28	Sept. 21
Estimated revenue ton-miles (billions)	21.3	21.2	20.7	20.3
% change from previous year	2.9	1.0	.5	.0

Total:	1991	1990	% change
41 weeks	801.0	816.9	(1.9)

Intermodal traffic

	Oct. 12	Oct. 5	Sept. 28	Sept. 21
Trailers	68,883	70,786	70,740	67,480
Containers	65,442	67,163	64,263	65,681
Total	134,325	137,949	135,003	133,161
% change from previous year	5.2	3.4	3	.8

		% change
Cumulative total: 41 weeks	4,843,381	(.5)



Source: Association of American Railroads

1992 Commuter Railroad Planner's Guide

Commuters from train No. 806 from Providence arriving at Boston's South Station. MBTA carries twice as many riders as it did 15 years ago.

How MBTA rebuilt ridership

A massive modernization program and service expansion rebuilt Boston's Commuter rail system into one of the most advanced in America—and ridership more than doubled.

By WILLIAM D. MIDDLETON,
Contributing Editor

"To live in the country, the real country, yet be able to attend to one's business in the city, is a dream which modern methods of rapid transit are fast making come true." — Winthrop Packard, in a 1905 Suburban Life article, quoted in "Metropolitan Corridor," by John R. Stilgoe.

In the great heyday of railroad commuting, the availability of economical and convenient commuter trains indeed made it possible for thousands of urban Americans to take up the pleasures of life in the suburban countryside.

Commuter rail services developed out of the growth of America's largest urban centers in the last half of the 19th century, and by the turn of the century railroad commuting between suburban homes and city workplaces had become a commonplace of urban life in such major centers as Boston, New York, Philadelphia, Chicago, San Francisco, and Montreal.

Commuters represented a substantial — and a profitable — business for the railroads for much of the first half of the century. Commuter traffic grew steadily to a peak of nearly 7 billion passenger-miles in 1929, before it began to decline in the face of highway development and the economic decline of the Great Depression of the 1930s. During and just after World War II rail commuting briefly approached the record levels of the 1920s, but soon resumed what seemed to be an unending decline. By this time, too, commuter traffic had become an increasingly uneconomic business for the railroads, and there was little incentive for capital investment in either new equipment or in an increasingly deteriorated infrastructure.

From about 1950 onward, the quality of commuter rail equipment, plant, and service declined steadily, and by 1962 commuter rail traffic was down to a low point of just over 4 billion annual passenger-miles.

But even as commuter rail declined, there was a growing recognition of the value of public transportation alternatives to private automobiles and congested urban highways. Particularly after passage of the Urban Mass Transportation Act of 1964, commuter rail systems began to share in a growing level of public support for mass transportation. Under public support, and then public ownership, commuter rail systems have entered a new era of growth. Equipment has been replaced, existing commuter rail plant has been rebuilt, and new services established. Over the past decade, commuter rail has become one of the nation's fastest-growing transit modes, and by the end of the decade U.S. commuter rail systems were transporting a record annual traffic of more than 7.2 billion passenger-miles.

Among all of America's original commuter rail centers, none saw a more precipitous decline in the quality of its commuter service or in its ridership than that experienced by Boston. Formation of the Massachusetts Bay Transportation Authority (MBTA) in 1964 provided a basis for public support of Boston commuter rail services. Beginning soon after the authority completed acquisition of the Boston commuter rail system in 1976, MBTA initiated a massive program of equipment rehabilitation and replacement, reconstruction of the commuter rail infrastructure, and service expansion that has rebuilt the Boston system into one of the most advanced commuter rail properties in North America. Over the past decade MBTA commuter rail ridership has more than doubled, and the system is now moving ahead with continued development and expansion that should make the 1990s a period of very nearly equal growth.

- **A commuter rail pioneer.** In that early era of the commuter train, Boston was one of the great centers of North American commuter rail. Indeed, Boston's railroads were among the pioneers in establishing suburban rail services. As early as 1838 the Boston & Worcester Railroad began offering what were probably the first "commuted" fares for daily travel between suburban

MBTA COMMUTER RAIL AT A GLANCE

Number of Routes:	
Northside:	5
Southside:	6
Total:	11
Route Miles:	265
Track Miles:	479
Stations:	101
Stations with Handicapped Access:	35
Total Parking Spaces:	16,000 (approximately)
Number of Locomotives:	72*
Number of Passenger Cars:	348**
Daily Trains	375
Hours of Service (approximately):	5:00 a.m. until 1:00 a.m.
Daily Ridership (1990):	76,360
Annual Ridership (Fiscal Year 1991):	19,855,272
On-Time Performance (1990):	94.2%
Fare Box Ratio (Fiscal Year 1991):	35.55%

Notes:
* Upon completion of current deliveries.
** Upon completion of current deliveries. Excludes 32 M-K rebuilt Budd cars now for sale.

areas and city terminals, giving rise to the term "commuter." The company began operating regular commuter trains between Boston and West Newton in 1843, and by the mid-1850s the Boston & Worcester was carrying nearly a half million annual commuters between their suburban homes and downtown Boston.

By the early years of the current century, Boston's railroads had developed an enormous commuter traffic. By 1913, the city's two downtown terminals were the busiest anywhere in the U.S. At South Station some 850 daily trains of the Boston & Albany and New Haven were handling over 38.4 million annual passengers, most of them commuters, while at North Station some 750 daily Boston & Maine trains carried a largely commuter traffic that totaled more than 29.5 million annual passengers. By 1920, the peak year for Boston's commuter rail services, the three railroads serving the city were carrying close to a quarter of a million commuters every day.

The fortunes of Boston's commuter railroads largely paralleled those of other U.S. commuter lines. Despite efforts to introduce more economic equipment in the early 1950s, notably through extensive use of rail diesel cars, traffic continued to decline and commuter services became increasingly uneconomic for the railroads. By 1959, after closure of the New Haven's former Old Colony lines serving points southeast of Boston, commuter rail ridership had hit a 90-year low.

A Mass Transportation Commission established by the state in 1959 recommended improved commuter services at lower fares, with subsidies to be provided through an expanded Metropolitan Transportation Commission. This new Massachusetts Bay Transportation Authority, established in 1964, was empowered to provide public transportation throughout the Boston metropolitan area, with an ability to contract to provide commuter service to communities outside this area. Over the next several years, MBTA began subsidizing Boston commuter services under contracts with the railroad companies. In 1972, the authority acquired Penn Central commuter properties reaching south and west from Boston, followed by purchase of the Boston & Maine's extensive commuter rail system north of Boston at the end of 1976.

By the time this consolidation of the entire Boston commuter rail system under

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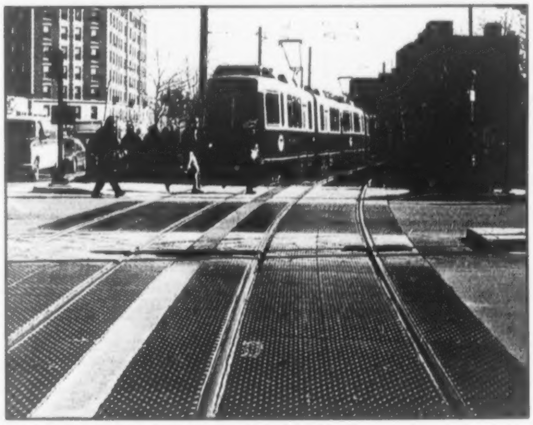

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MBTA ownership was completed, both equipment and plant were in an advanced state of deterioration. Except for the sizable fleet of rail diesel cars acquired in the 1950s, most commuter rolling stock was long overdue for replacement. Because of poor track condition, most commuter lines had severe speed restrictions, and some required emergency repairs to allow temporary safe passage of trains. Main line derailments were common, and on-time train performance was down to only 78 %.

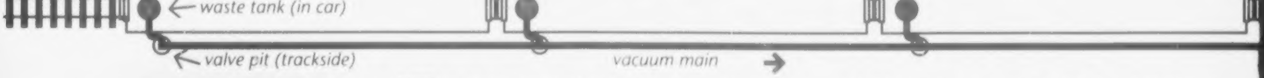
With the full Boston commuter system firmly under MBTA control, the Authority began a massive program of equipment replacement and rehabilitation, as well as a comprehensive rebuilding of the commuter rail plant that is now more than a decade along.

Principal funding for this capital program has come from a combination of Federal grants through UMTA with state funds generated from a series of transportation bond issues. A total of $2.6 billion in state funding for MBTA has been provided through these bond issues since 1983, with $842 million of that total allocated to commuter rail projects.

- **Rebuilding the infrastructure.** Reconstruction and improvement of fixed plant was clearly one of the most pressing tasks that faced MBTA when it assumed ownership of the Boston commuter rail system. Maintenance operations were reorganized and modernized with a major investment in "state of the art" equipment, and the entire commuter rail fixed plant was inventoried and its condition assessed to form the basis for a capital investment program intended to provide the Boston area with an advanced commuter rail system. From this effort MBTA evolved a three-phase program that provided first for immediate needs, second for renewal of all worn out or technologically obsolete systems and components, and, finally, investments that would expand system capacity and improve the attractiveness of commuter rail services.

Track rehabilitation represented one of MBTA's most urgent tasks. Through the end of 1990, the authority had laid some 372 miles of cwr, replaced more than 750,000 cross ties, installed some 650,000 tons of ballast and cleaned ballast on more than a hundred miles of track, resurfaced and realigned track throughout the system, and surface ground hundreds of miles of rail. Over 200 turnouts were renewed, and some 26,000 switch timbers replaced. A track geometry car was acquired to perform quarterly quality control tests for all track. Culverts and retaining walls were renewed, drainage ditches were cleaned, brush was cleared, and more than a hundred grade crossings rebuilt.

Structures have come in for similar attention. Bridge projects have included 24 replacement structures, among them a 1628 foot fixed span replacement for a drawbridge crossing of the Mystic River at Everett, and the rebuilding of 54 bridges, including three major drawbridge spans. Signaling and train control work included the installation of six new train control machines and over 200 miles of new TCS signal system, the instal-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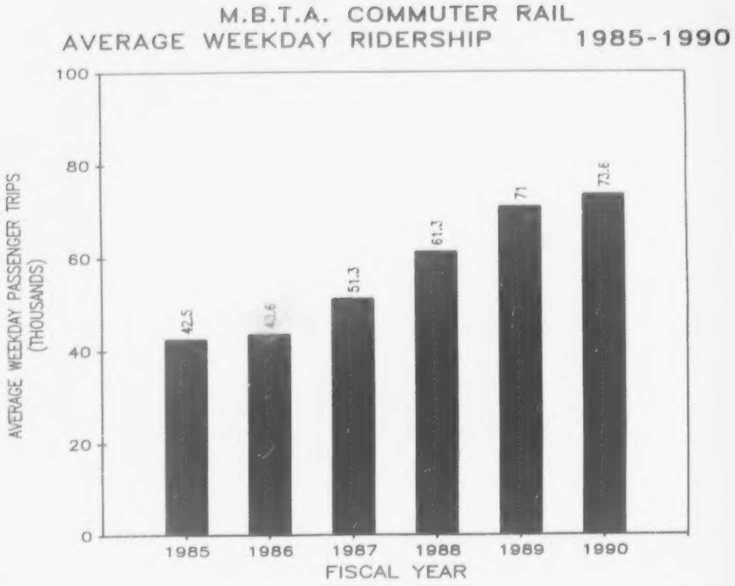


lation of automatic gates or signals at more than 100 grade crossings, and extensive replacement and renewal of existing interlocking and signaling cable and plant.

Station and terminal facilities have been upgraded throughout MBTA's commuter rail system. Some 24 new stations have been built, and more than 60 have been rebuilt with such improvements as lengthened platforms, new lighting, canopies, and other amenities, while handicapped access improvements have been completed at more than a third of the system's commuter stations. Thousands of new park-and-ride spaces have been completed.

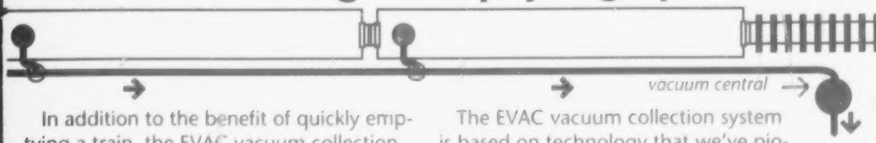
Station improvements for T commuters have included such major facilities as a new intermodal terminal and parking garage at Lowell, and a new bus-rail station at Salem. Late this year, MBTA and the city of Lynn are completing a new $48 million multimodal transportation center at Central Square in downtown Lynn that includes a 1,000-car parking garage, terminal facilities for 13 bus routes, and even provision for connection with a future extension of MBTA's Blue Line rapid transit route, as well as commuter rail facilities.

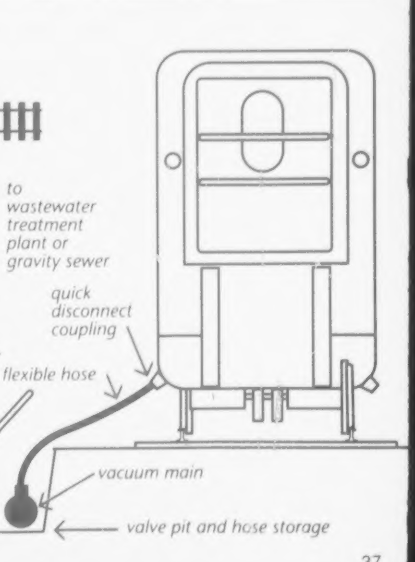
Both of MBTA's downtown Boston commuter rail terminals are undergoing a comprehensive rebuilding into modern transportation centers.

Furthest along is the South Station Transportation Center, where a multi-phase project is transforming the once dilapidated 1899 terminal into a modern multi-modal transportation and commercial center that is already spurring redevelopment of the once declining downtown area around the terminal. Already complete is a $25 million project that provides a direct link to an enlarged Red Line subway station adjacent to the terminal. Also complete is a $49 million Phase 1 South Station project that included reconstruction and extension of the original 1899 head house to provide new passenger facilities for both MBTA and Amtrak, and more than 100,000 square feet of office and retail space. The work also included 11 new terminal tracks with high level platforms, and foundation work for planned Phase 2 air rights development over the terminal.

Construction should begin next spring for a $75 million second phase of the South Station project that includes a terminal for in-

vacuum sewage emptying system.

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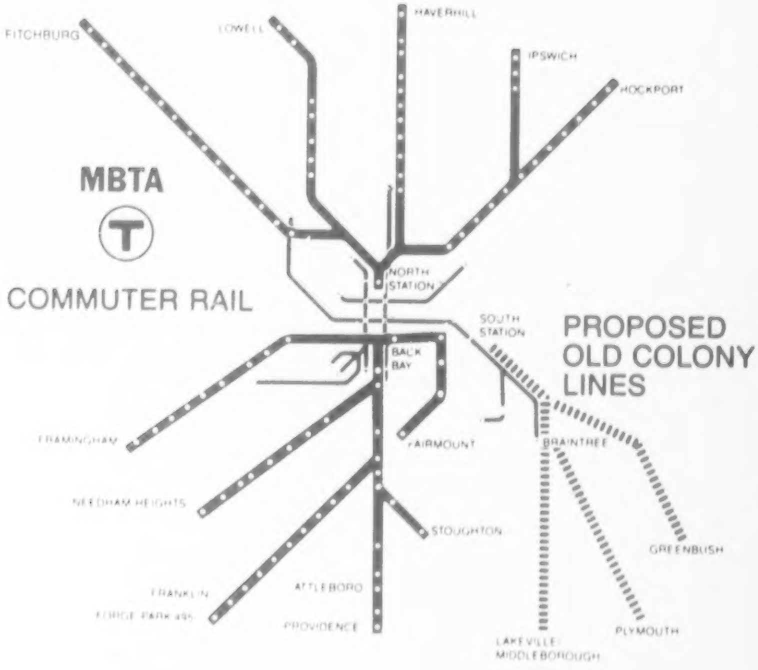
tercity, commuter, and Logan Airport express busses on a first air rights level above the tracks, and a second level that will provide parking space for 215 cars. Ramps will link the bus terminal and garage to surrounding city streets and highways, and to the city's planned new Central Artery/Third Harbor Tunnel project. Other work will include an additional terminal track and platform to accommodate the planned expansion of MBTA commuter rail service to the Old Colony lines, a park on the west side of the station, and an enclosed pedestrian connector linking the rail and bus terminals. The City of Boston and its Boston Redevelopment Authority hold air rights for still another planned phase of work above the Phase 2 project. Original plans called for four levels of additional parking and a 600-room hotel, but the city has now selected Tufts New England Medical Center as the developer for a bio-technology center project in the air rights site.

Work began in 1990 for a $300 million project of similar magnitude that will transform MBTA's second Boston terminal into a new North Station Transportation Center. Already complete is the construction of high level platforms and two additional terminal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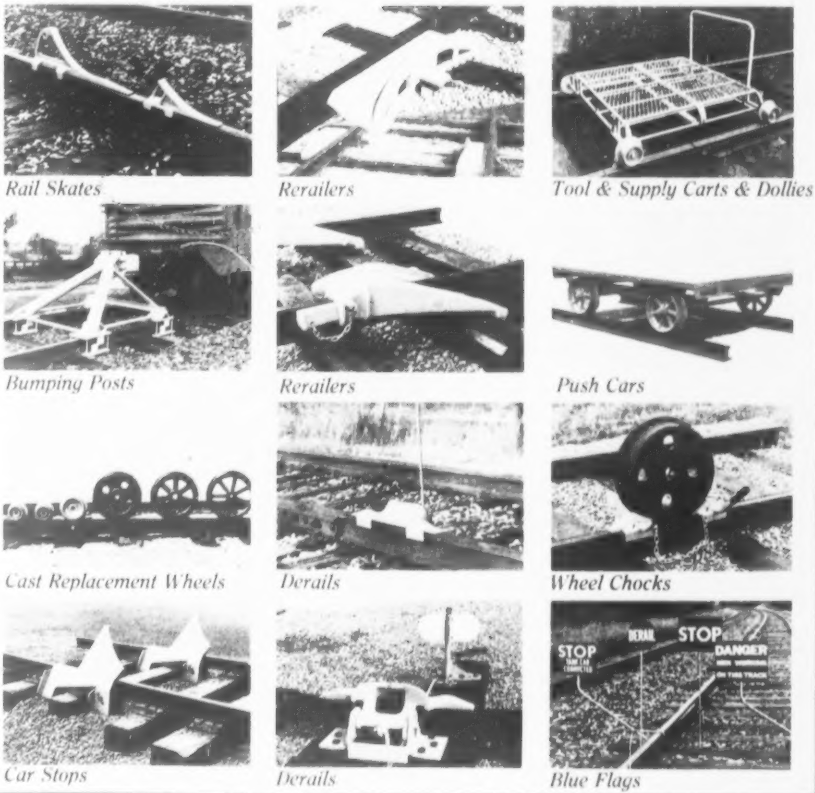
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tracks, while work is in progress on the top-down construction of a five-level, 1,300 car parking garage just to the rear of the existing Boston Garden structure that should open in June 1993. The work includes the construction of deep-core caissons for air rights development of a planned new Boston Garden arena that will replace the old facility. The project also includes the demolition of the Green Line light rail elevated structure adjacent to North Station and relocation of light rail trains into a new subway alongside the existing Boston Garden site and through the parking garage. A new "super station" beneath North Station will provide both Orange Line rapid transit and Green Line trains with a direct connection to MBTA commuter trains.

By far the largest single MBTA infrastructure project to date has been the $750 million Southwest Corridor project completed in 1987, which provided a new high speed entry into Boston for both MBTA commuter rail and Amtrak trains, as well as a new alignment for MBTA's Orange Line rapid transit route. Funded from Interstate Transfer funds generated through cancellation of an I-95 expressway project, the 4.7-mile line was constructed over an eight-year period from 1979 through 1987. Replacing the old New Haven Shore Line embankment on substantially the same alignment, the Southwest Corridor provided a fully grade separated, depressed three- track right-of-way for commuter and Amtrak traffic, in addition to the double-track Orange Line. Track is laid with cwr on concrete ties. New stations at Forest Hills and Ruggles serve commuter rail trains, while a new Back Bay station serves both commuter and Amtrak trains.

In addition to rehabilitating the commuter rail operating infrastructure, MBTA is also upgrading its commuter rail support facilities. New maintenance of way facilities have been completed at Salem and Readville, and a 36,000 square foot coach service building was constructed to support MBTA's Northside lines.

Just last month, MBTA completed its largest support facility to date, a $31 million inspection and service facility for its Southside commuter rail fleet. Located at Five Yard near South Station, the 59,000 square foot structure provides complete facilities for train washing, interior cleaning, fueling, sanding, inspection, and light running repairs, replacing outdoor servicing facilities and reducing the need for a circuitous transfer of equipment to MBTA's principal commuter rail maintenance facility, the Boston Engine Terminal located in Somerville on the Northside system. The new shop facility can accommodate a nine-car train and locomotive on each of its two tracks, and can complete the entire inspection and service process for a train in just 45 minutes.

Tracks are mounted on pedestals, with an inspection pit between the rails, through the full length of the shop, while a full length platform at car floor height provides access for car servicing and cleaning. A drop table serviced by a 10-ton crane is available for changing wheel sets at one end of the facility. Anticipating that the MBTA commuter rail equipment fleet will increase by more than half over the next two decades with the restoration of Old Colony Line service, the shop is expandable to three tracks.

Slated for construction later in the 1990s will be a replacement for the antiquated Boston Engine Terminal, which represents MBTA's principal commuter rail maintenance base.

• **Expanding the network.** In addition to rebuilding the commuter rail infras-

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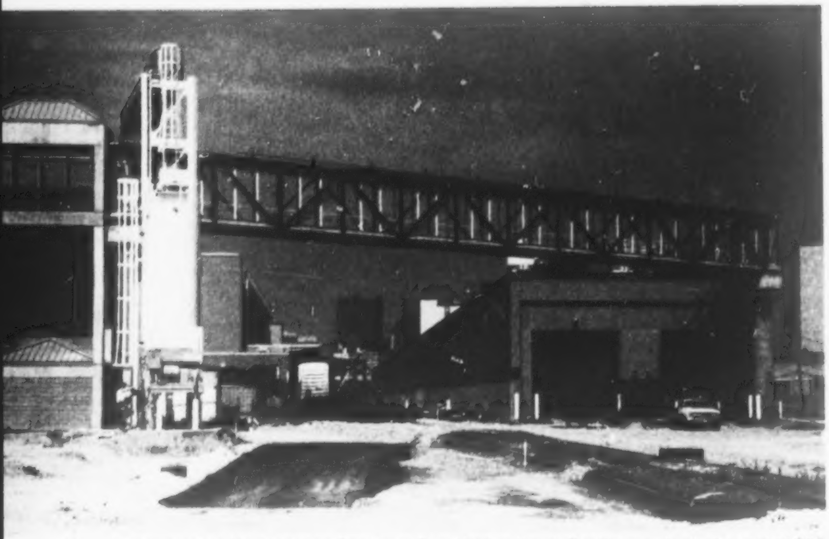

New Commuter Rail Maintenance Facility at Five Yard in South Boston was built at a cost of $35 million. Design engineer was STV/Seelye Stevenson Value & Knecht.

tructure, MBTA has restored or extended service on several of its routes both north and south of Boston during the 1980s. On the Northside lines, service was extended 21 miles north from Reading to Haverhill, and 24 miles northwest from South Acton to Fitchburg. On the lines south of Boston service was extended 12 miles south from Attleboro to Providence, R.I., on the Boston-New York main line shortly after opening of the new Southwest Corridor, while in 1988 Franklin Branch service was extended 3 miles to serve a new 382-acre mixed-use commercial, industrial and residential development at Forge Park/Interstate 495. An entirely new route was added to the Southside lines following opening of the Southwest Corridor in 1987, when a service was established between South Station and Readville via the 9- mile Midland Branch. The route had been upgraded as a temporary route for MBTA and Amtrak trains during Corridor construction.

• **A new equipment fleet.** MBTA entered the commuter rail business with a varied collection of motive power and rolling stock inherited from its predecessor companies that included well-used diesel- electric locomotives, a substantial fleet of cascaded main line passenger cars, and an aging fleet of nearly 100 Budd RDCs.

This initial equipment fleet was substantially altered beginning in the late 1970s as MBTA began a shift to locomotive-powered push-pull trains as its basic operating mode.

During 1978-80 MBTA acquired 19 rebuilt 1,750-hp EMD F units and 18 new 3,000-hp EMD F40PH units, equipped for head end power and push-pull operation. At the same time, a basic standard for MBTA commuter coaches was established by a 60-car order supplied by Pullman-Standard in 1979. These single level, aluminum cars were outfitted with 2-2 seating for 95 or 99 passengers, and were divided between 15 control trailer and 45 mid-train units for push-pull operation. At the same time, MBTA began a conversion of its RDC fleet for operation as non-powered units in push-pull train sets. Many of the Budd cars were operated in locomotive-hauled trains with limited modifications, while 32 RDCs were fully rebuilt by Morrison Knudsen in 1982 as control trailer or mid-train units.

Supported by the state's transportation bond issues, MBTA has completed the acquisition of a substantial new commuter rail motive power and rolling stock fleet over the past five years, both to accommodate a ridership growth that averaged 15% annually through 1985-1990 and to permit the replacement of its older rebuilt locomotive and passenger car fleet.

During 1987-88, MBTA acquired another 26 new EMD F40PH-2 locomotives, while this year Morrison Knudsen is completing the delivery of an order for nine rebuilt F40PH-2M units, one of which is a replacement for an F40PH unit wrecked at Back Bay last year. Locomotives delivered under these two most recent orders are equipped with separate engines for head end power, affording both quieter operation and greater fuel efficiency.

More than 200 additional single-level, push-pull coaches were added to the MBTA fleet between 1987 and 1990, adding 24,500 seats to MBTA's commuter rail capacity. West Germany's MBB supplied a total of 67 units in 1987, while Bombardier supplied 147 cars, essentially identical to MBTA's earlier Pullman-Standard units, in three orders delivered between 1987 and 1990. For all three Bombardier orders, the Authority shifted to a 3-2 fixed seating configuration accommodating 122 or 127 passengers.

Confronted by continuing traffic growth, and with its maximum train length limited to nine cars by current platform lengths, MBTA has shifted to double deck equipment for its most recent rolling stock acquisition in order to expand peak period train capacity beyond that possible with single level coaches. A fleet of 75 double deck cars now being delivered by Nissho Iwai, Inc. and Kawasaki, Inc. of Japan will each seat either 175 passengers in control trailers, or 185 passengers in a mid-train trailer unit, with a fixed 3-2 seating configuration. The new double decker fleet will add another 13,625 seats to the MBTA commuter inventory.

Constructed with a stainless steel car body shell, with low alloy high tensile steel end underframes, the new cars are 85 feet 4 inches long, and 15 feet 6½ inches high.

Specifications for the cars, ordered in 1989, were developed by Seelye, Stevenson, Value and Knecht after extensive clearance and configuration studies. Requiring a car that can load and unload from either high- or low-level platforms, sometimes from both levels at the same time, MBTA selected a design with conventional end vestibules with wide single stream sliding doors and manually operated trap doors. Steps at each end lead to the upper and lower levels, and handicapped accommodations are provided at platform level at the No. 2 end. The new cars have also achieved a significant tare weight reduction for each passenger carried. A double decker mid-train trailer weighs just 681 pounds per seated passenger, while the most recent comparable single-level cars weigh 733 pounds per seated passenger.

Completion of double decker deliveries will provide MBTA with sufficient capacity both to meet projected traffic growth, and to permit retirement of the last of its rebuilt Budd RDCs from service.

MBTA's next major equipment project will be a mid-life overhaul of its initial 1979 Pullman-Standard car fleet, which is now approaching 12 years of service. The Authority expects to advertise for bids for the overhaul program by next spring.

• **Enhancing intermodal access.** Most commuters do not walk from their homes to the train, and most don't walk from the train to their place of work either. Recognizing this, MBTA has made enhancement of intermodal access between its rail services and both automobile use and public transit an integral part of the rebuilding of the Boston commuter rail system.

Intermodal access usually means plenty of parking at the suburban end of the commuter journey, and the expansion of park-and-ride facilities has been a key part of MBTA's program for the improvement or replacement of its suburban stations. The commuter rail system now has a total of some 16,000 park-and-ride spaces, with still more planned.

MBTA also has greatly improved access between commuter rail and the Authority's own surface transit routes. Convenient T bus connections, with coordinated schedules, are available at virtually every commuter rail station within the 78 cities and towns that make up MBTA's service district. The Authority works with other transit operators, as well, to provide equally good connections and coordinated schedules at its outlying stations outside the MBTA service district.

The T's improvement programs of the past decade have done much, too, to provide more direct and convenient access between commuter rail stations and MBTA's urban rail transit system. The Northwest Extension of the T's Red Line completed in 1984-85 included a link with the North Side commuter rail route to Fitchburg at Porter Square, while an earlier relocation of the north end of the Orange Line added a connection with the Haverhill commuter rail line at Malden Center.

The Southwest Corridor project completed in 1987 affords a model example of the intermodal integration of commuter rail with rapid transit and surface transit services, and with automobile usage. The 4.7-mile project included both a new high-speed entry to Boston for Amtrak and commuter trains, and tracks for a relocation of MBTA's Orange Line rapid transit route, with connections between Orange Line and commuter rail trains available at the Back Bay, Ruggles, and Forest Hills stations. T bus connections are available at every commuter rail station, and the planned restoration of service on the Arborway route will provide a connection to the Green Line light rail system at Forest Hills.

Reconstruction of MBTA's Boston commuter rail terminals is providing improved rail transit links as well. Already complete is the construction of a new Red Line subway station and connecting link at South Station, while a new subway station now under construction at North Station will provide direct commuter rail links to both the Orange and Green Line rail systems.

Connections with intercity rail services on Amtrak's Northeast Corridor and Springfield lines are available at MBTA's South Station, Back Bay, Framingham, Route 128, and Providence commuter rail stations.

While MBTA has not yet developed a fully integrated fare structure for its commuter rail and transit services, the Authority's monthly commuter rail passes do permit free transfer between commuter rail and other T transit services.

• Access for the disabled. Like all other public transit agencies, MBTA is faced with the need for a major effort that will be required to make its commuter rail services fully accessible to the handicapped. This need has been recognized as a fundamental part of MBTA's rebuilding program for Boston's commuter rail system, and substantial progress towards a full accessibility goal has already been made.

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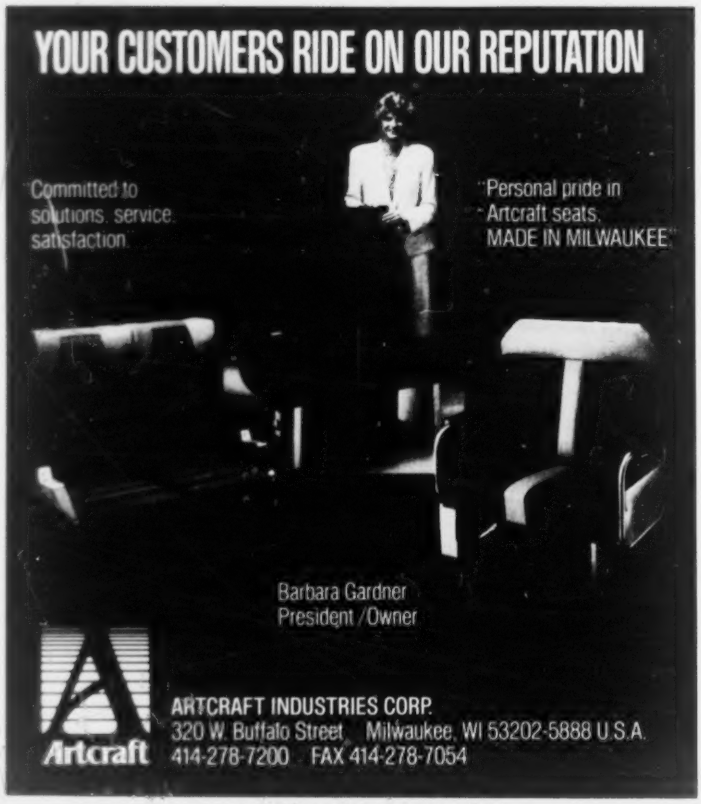
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viding handicapped access. Typically, these are located at the country end of platforms, positioned so that the first pair of adjacent doors of an outbound train can be spotted opposite the high platform. More recently, the Authority has adopted full length high platforms as its standard for new or rebuilt stations. Even before this, all three new stations constructed as part of the Southwest Corridor project, and the rebuilt Boston terminals at North Station and South Station were built with full-length high platforms. Altogether, more than a third of MBTA's 101 commuter rail stations are now accessible to the handicapped, with access improvements planned for still more. With the exception of only a few locations, stations on the T's Attleboro, Stoughton, Needham, Rockport, and Ipswich lines are now fully accessible to the disabled.

Starting in 1982, MBTA began equipping its coaches with a lightweight hinged boarding plate to span between the car and platform for handicapped passenger boarding, and all of the Authority's new equipment ordered since then has been outfitted with accommodations for the handicapped. The 75 Kawasaki double deck cars being provided under the most recent rolling stock order, for example, are provided with two wheelchair tiedown positions in the mid-level platform height compartment at each end of the car.

• **New ideas in fare collection.** Thus far, MBTA has continued to employ a conventional, non-automated fare system, with train crews responsible for on-train fare collection. Tickets are sold at major terminals, at some 30 ticket agencies at or near stations, and on board trains. One-way and 12-ride tickets and monthly passes are available, as well as special fares for children, students, and senior citizens. Fares are based on a zone system, with eleven fare zones in addition to two terminal zones.

MBTA's monthly commuter passes, which also provide access to the T's rapid and surface transit system, offer significant savings for regular riders.

"More and more people are beginning to realize what a bargain it is," says John F. "Jack" Flaherty, chief transportation officer for MBTA commuter rail, "and more than 60% of our commuter rail riders are now using monthly passes."

"Even so," says Flaherty, "about $9 million a year in revenue is still picked up by our train crews."

It is this volume of on-board fare collection, together with the relatively short distances between most commuter rail stations, that sets the size of train crews, and MBTA is looking for fare collection alternatives as a means of significantly reducing its operating costs.

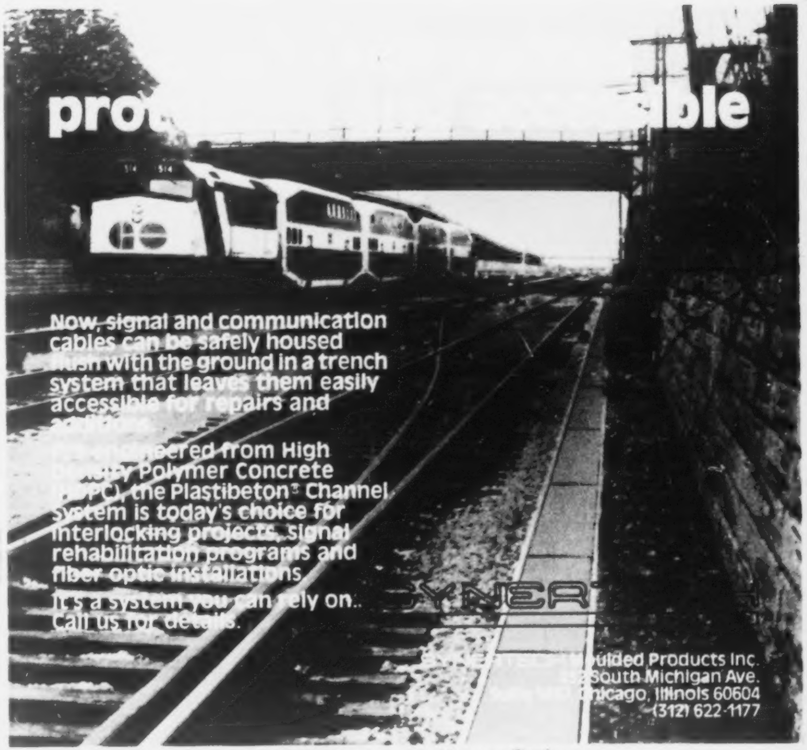
One such alternative recently tried was a one-way only fare collection experiment, much like the system now common for toll bridges, tried for more than a year on the Framingham and Lowell lines. Round trip fares were collected on inbound trips, while there was no fare collection on outbound trips. By reducing crew sizes in the "free" direction, MBTA estimated that it could save $50,000 annually on each line in train crew overtime costs. The experiment, which ended Sept. 1, produced the estimated cost savings without any loss of ridership. But MBTA also found that traffic increased by 7% to 8% in the "free" direction, and one reason for ending the experiment was to see if revenue from this increased ridership can now be captured.

A next step in MBTA's efforts to find a more economical approach to fare collection will be a system-wide study by consultant J. W. Leas & Associates that will consider both the current fare structure and the feasibility of proof-of-payment/barrier-free fare collection and other possible alternatives. The objective for MBTA commuter rail, says Jack Flaherty, will be to "get revenue collection off the train."

• Marketing the service. With a double digit commuter rail ridership growth rate that has followed close on the heels of improvements to the quality and capacity of the service, MBTA has not had to make a major effort to market the service. Consequently, MBTA's marketing efforts for commuter rail have thus far been limited primarily to the promotion of services operated for special events.

Typical of these services, for example, is the T's special "Fenway Flyer" service operated during the baseball season to Yawkey Station, adjacent to Fenway Park on the Framingham line, with a return service following each game. Operated from the Framingham, Attleboro, and Franklin lines, the "Flyer" service transported more than 58,000 baseball fans during the 1990 season. In the Fall, a similar service is operated from South Station to carry pro football fans to and from every New England Patriots home game at Foxboro Stadium, which is located adjacent to the Attleboro line. Still other special services are operated for circuses and other major special events.

But under plans being put forth by Massachusetts Secretary of Transportation and MBTA Chairman Richard L. Taylor, this limited marketing effort should soon give way to a major program. Anxious to develop additional revenues for the Authority, Taylor is committed to allocating the re-



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sources needed for a significant effort to improve marketing of the Authority's transportation services through both television and print media.

"With this kind of a marketing effort," says commuter rail chief transportation officer Jack Flaherty, "we should see a new era on the MBTA."

- **Contract operation by Amtrak.** In the mid-1970s, as MBTA shifted from the provision of subsidies to the railroads that operated Boston commuter services to outright ownership of commuter rail equipment and plant, the Authority contracted with the Boston & Maine to operate the service. B&M operation continued through 1987, when a renewal of the contract went to Amtrak.

In addition to operation, the Amtrak contract includes maintenance of equipment and plant, except for the Attleboro and Framingham lines, which are maintained directly by Amtrak and by Conrail, respectively. The three-year contract, which is renewable on an annual basis, has been bringing in some $60 million to $70 million annually in gross revenues for Amtrak.

With the shift in operating contractors, MBTA achieved several important improvements to its contract provisions. One of the most important was a provision for incremental performance incentives, under which Amtrak receives additional payments for monthly on-time performance between 91% and 100%. Conversely, the contract provides for penalties for on-time performance below 89%. With an on-time performance level well above the incentive threshold, Amtrak has been earning as much as $2 million annually in performance incentives.

Other important changes that have come with the Amtrak contract have significantly reduced MBTA's train crew costs. The Amtrak contract, for example, deleted a previous mileage agreement under which engineers were paid overtime for service above 100 miles a day, while conductors were paid overtime for service above 150 miles. Under the Amtrak contract, no firemen are required, and train crews can be limited to only two for trains up to six cars, with one additional collector for a train of up to nine cars. Because of fare collection requirements, however, MBTA has not yet been able to take full advantage of these provisions.

- **Positive results.** If the task of rehabilitating Boston's commuter rail system is still far from over, MBTA has achieved some notable results.

MBTA's substantial investment in new equipment and plant rehabilitation permits an overall quality of service that is far superior to that provided by the worn out systems inherited by the Authority in the mid-1970s. Overall schedule speeds have been significantly improved, and service reliability has climbed from the dismal 78% on-time performance of the mid-1970s to a 1990 fiscal year high of 94.2%.

All of this has contributed to the phenomenal ridership gains achieved by MBTA's commuter rail system. In just 13 years, daily ridership increased by more than 150% from a 1977 level of just over 30,000 passengers to a 1990 level of well over 76,000.

MBTA has made some significant progress in its financial results, as well. The system's operating cost per train mile, for example, was reduced by almost 11% in the six years from fiscal year 1986 to 1991, and the fiscal year 1991 cost of $23.24 per train mile was some 8% below that of ten years earlier. Although it still has far to go to reach its goal of a 70% farebox recovery ratio for commuter rail, the T has made some appre-

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ciable progress, with a steady improvement from a 1981 recovery ratio of less than 22% to a fiscal year 1991 ratio of almost 36%.

- **A coming decade of growth.** With a number of major system expansion projects in prospect, MBTA commuter rail can look forward to another decade of growth and development.

Chief among MBTA's projects for the 1990s will be the Old Colony Railroad Rehabilitation Project, which will restore commuter rail service over the former Old Colony lines serving the south shore communities southeast of Boston that now represent the only metropolitan Boston area without commuter rail service. Since Old Colony service was ended by the New Haven Railroad in 1959, traffic on the city's Southeast Expressway has reached a daily count of 150,000 vehicles, double its intended capacity. At the same time, traffic on MBTA's Red Line rapid transit route, which reaches Braintree, has reached a near capacity level of 189,000 riders.

Restoration of service was recommended by a 1984 feasibility study, and MBTA is now moving ahead with a $560 million project that will provide commuter service over three Old Colony lines linking Boston's South Station with Middleborough, Plymouth, and Greenbush. Funding for the work is divided equally between federal grants and state funding from transportation bond issues. Work on the project will include reconstruction of some 82 miles of track, construction of passing tracks and layover facilities, installation of crossing protection, construction of 21 stations, and rebuilding or repair of numerous bridges.

Work will begin first on the Middleborough and Plymouth lines, where environmental impact studies are complete, while wetlands questions and other environmental concerns will delay a start to work on the Greenbush line. The project's first construction should start by spring with the rebuilding of the Neponset River bridge near Quincy and other bridge repairs. Service to Middleborough and Plymouth is expected to begin in 1996, while the Greenbush line should open a year later. Traffic projections for the Old Colony line anticipate that the service will be carrying about 13,000 riders daily by the year 2000.

MBTA anticipates a requirement for 14 new locomotives to operate Old Colony service, and expects to place an order about two and a half years prior to the opening date for the service. Additional passenger cars may be required as well, dependent upon the rate of traffic growth elsewhere on the T commuter system, and the Authority plans to assess its needs at about the same time a locomotive order is placed.

Although capital funding is not yet in place for the work, the balance of the decade could see service extensions on as many as six of MBTA's commuter routes as well. Furthest along is a projected 10-mile extension of Northside service from Ipswich to Newburyport. Environmental studies and preliminary design are already complete, and final design is now in progress. Design engineers have been selected for conceptual design and environmental studies for extensions of Southside service 23 miles west from Framingham to Worcester, and some 37 miles south from Stoughton to New Bedford or Fall River. Another Southside project likely to go into design early in 1992 is a spur from the Franklin line to Foxboro Stadium. Still other extensions that have been studied over the past several years include an 11-mile southward extension of the Franklin line to Bellingham and Milford, and a 10-mile extension northward from Lowell to Nashua, New Hampshire.

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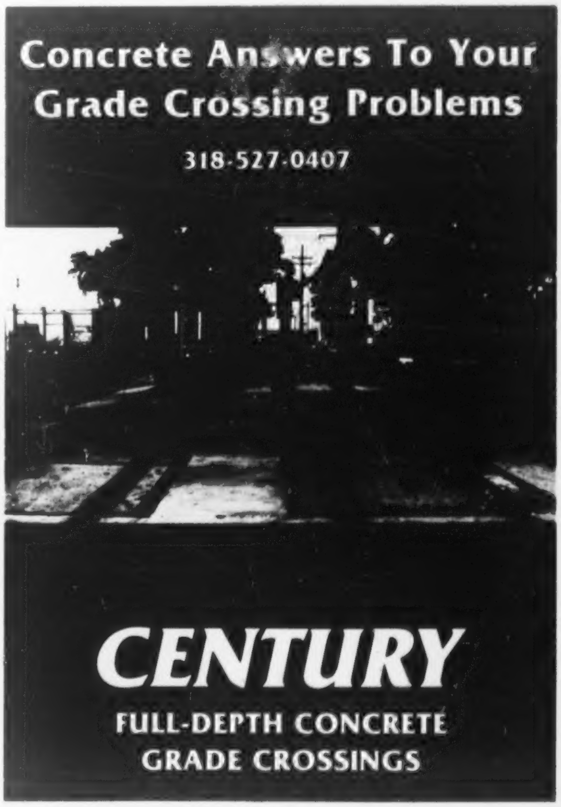

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A major Boston transportation project likely to have at least short term implications for MBTA commuter rail is the $5 billion Central Artery/Third Harbor Tunnel project which will disrupt downtown Boston for the next decade as contractors replace the Interstate 93 elevated structure through the central business district with a new below ground Central Artery, and build the access roads and a new tunnel that will provide a third crossing of Boston Harbor. MBTA anticipates that the impact of all this construction on road transportation will shift a substantial volume of commuter travel to rail, and the T's recent equipment acquisitions have anticipated this extra traffic."

"We see our recent equipment acquisition and rehabilitation as critical to meeting the demand on public transportation during this period," says MBTA's Jack Flaherty.

The Central Artery project could have longer term implications for MBTA commuter rail, as well, if a move to add a rail link between North and South stations to the project is successful. Rail passenger advocates have proposed that the rail link should be built as part of environmental mitigation efforts that accompany the highway project. This could take the form of either a rail line integral with the below grade highway or one on a separate alignment. In addition to allowing a direct link between northern New England points and the Northeast Corridor for long distance Amtrak services, the proposed project would provide a direct link between MBTA's North- and Southside commuter systems, now joined only through a circuitous route via Cambridge, that could facilitate equipment moves between the two systems or permit through routing of some trains. The idea of a link between the two stations will get a closer look as part of a broader study of the state's rail transportation needs recently announced by Transportation Secretary Richard L. Taylor. Consultants will develop the two-year study.

Still another opportunity for major change to the MBTA commuter rail system lies in Amtrak plans to complete electrification of the Northeast Corridor by 1995. The extension of Amtrak catenary from New Haven to Boston would permit MBTA to electrify its heaviest commuter service, the 44-mile route which operates in the Northeast Corridor between South Station and Providence. This one line generates a daily ridership of more than 20,000 passengers, well over 20% of MBTA's total traffic.

If MBTA has made no firm plans to electrify, the Authority has made sure that it can readily make the change when the time does come. Design work for the Southeast Corridor, for example, included provision for the later installation of overhead catenary. MBTA has asked Amtrak to allow for a future T electrification in their plans, and has agreed to finance the additional costs needed to provide adequate capacity for future MBTA needs in Amtrak's fixed electrification plant. And the design of the new Southside maintenance and inspection facility just completed by MBTA included the provision of platforms for locomotive pantograph service and inspection, just in case the facility takes on electric locomotive maintenance in the future.

The prospects for normal traffic growth on the current MBTA system, as well the new traffic that will come with the opening of the Old Colony and other new lines, combined with all of these other prospective changes to the system, promise to make the next decade an active one for Boston's commuter rail system.

"We're planning for it, we're gearing up for it," says MBTA's Jack Flaherty. "We see ourselves being pretty busy over the next ten years." ■

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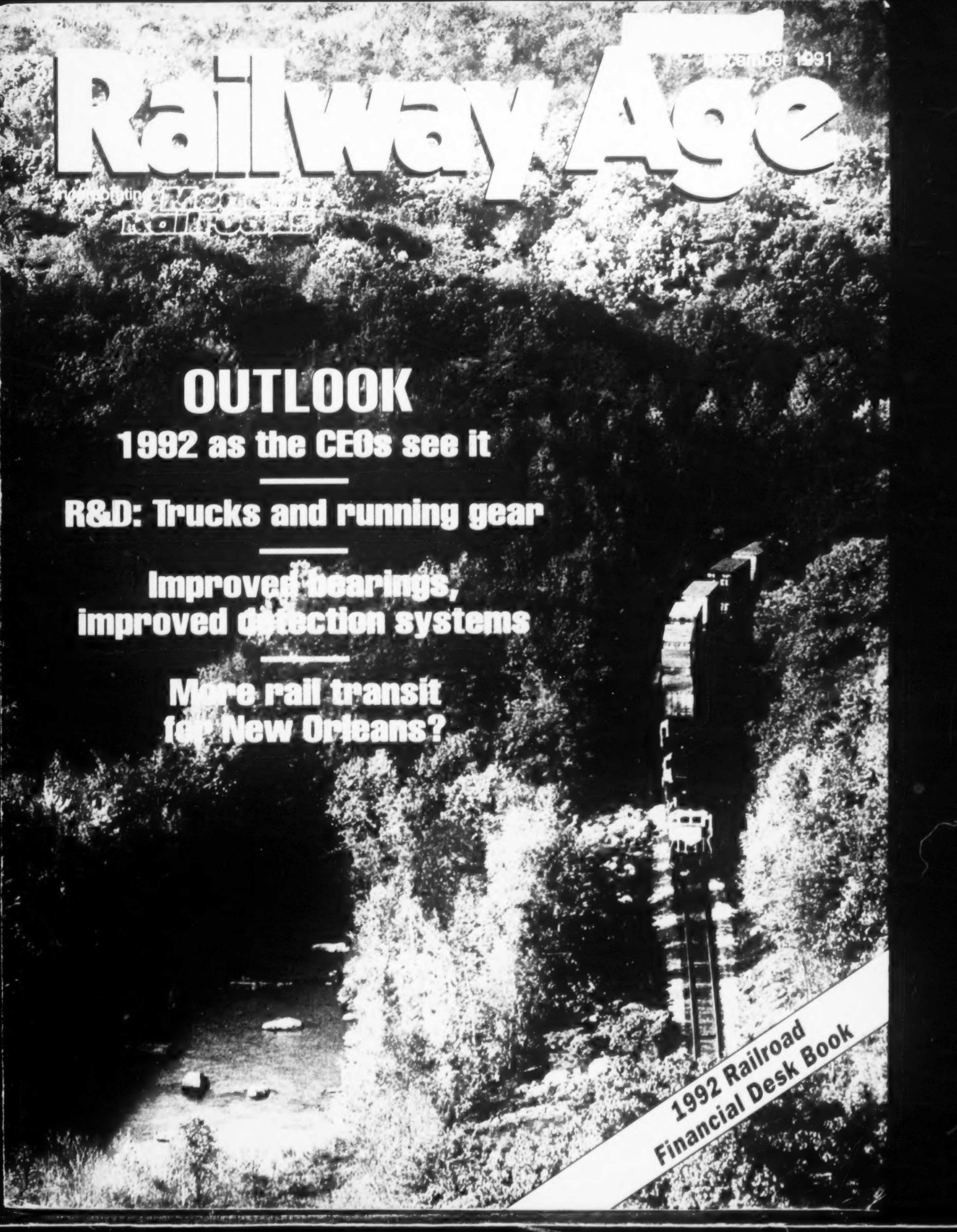

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Cover: Eastbound NYS&W double stack train east of Newfoundland, N.J.
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Market Outlook

Equipment

Los Angeles County Transportation Commission: Awarded a $4.6 million contract to Safetran Systems Corp. for design, supply, and testing of signaling and control systems equipment for a new 15-mile commuter railroad line between San Bernardino County and downtown Los Angeles. The new line, rebuilt to modern main line standars, will replace 15 miles of track originally laid in 1912 as the Pacific Electric Railway's interurban link between Los Angeles and San Bernardino.

Santa Fe: Ordered 67 six-axle and 23 four-axle 4,000-hp Dash 8 diesel-electric units from General Electric for delivery in second- and third-quarter 1992 (see p. 16).

TTX: Awarded a contract worth nearly $65 million to Gunderson for 1,625 Maxi-Stack III intermodal platforms. Delivery of the order begins next month and is to be completed by late summer 1992. Gunderson President L. Clark Wood said this is the biggest new-car order ever received by Gunderson and "assures that our 1,000-plus employees will be very busy throughout much of 1992."

Union Pacific: A "significantly increased" capital budget for 1992 calls for acquisition of 60 new diesel-electric locomotives, overhaul of 325 SD40-2 units, and an "aggressive" freight car rebuild program.

Facilities

Amtrak: Awarded a $3 million contract for eight 80-mph trackwork crossovers to a consortium formed by Bethlehem Steel's Rail Products and Pipe Division of Steelton, Pa., and Balfour Beatty's Railway Engineering Division, Nottingham, England. The 800-foot-long crossovers, the longest high speed special trackwork installations in the U.S., will be located along Amtrak's lines between New Haven, Conn., and Boston, Mass. Balfour Beatty will manufacture the European-style asymmetric switch points and moveable point frog sections. Bethlehem will furnish the rail and other components and assemble the sections on concrete ties.

BiState Development Agency: Under subcontract to prime contractor Morrison Knudsen, Harmon Industries will provide a $4.7 million signaling and train control system for the St. Louis Metro Link light rail transit project. This is Harmon's first major transit contract.

Revenue freight carloadings

Commodity	Nov. 9 week	Nov. 2 week	Oct. 26 week	Oct. 19 week
Grain	27,387	24,913	31,252	32,507
Other farm products	1,930	2,107	2,190	2,045
Metallic ores	14,251	13,086	14,823	13,561
Coal	128,936	128,131	134,663	131,204
Crushed stone, gravel and sand	12,758	13,229	15,272	15,630
Nonmetallic minerals	7,491	8,842	8,971	9,339
Grain mill products	9,742	9,844	10,102	9,967
Food and kindred products	9,073	9,016	9,380	9,137
Primary forest products	9,132	9,122	9,333	9,295
Lumber and wood products	5,034	5,839	5,518	5,359
Pulp, paper and allied products	9,594	9,867	10,195	9,537
Chemicals and allied products	28,018	28,014	28,941	27,658
Petroleum products	5,453	5,116	5,008	5,000
Stone, clay and glass products	8,634	8,911	9,590	9,653
Coke	5,533	5,843	5,381	5,363
Metals and products	9,900	10,359	9,803	9,695
Motor vehicles and equipment	17,866	18,949	19,767	18,952
Waste and scrap materials	8,399	8,710	9,110	8,850
All other carloads	6,635	7,497	7,580	6,747
Total Cars Loaded	**325,766**	**327,395**	**346,879**	**339,499**
% change from previous year	(3.4)	(6.4)	(1.4)	(2.1)

		% change
Cumulative total: 45 weeks	14,481,636	(5.1)

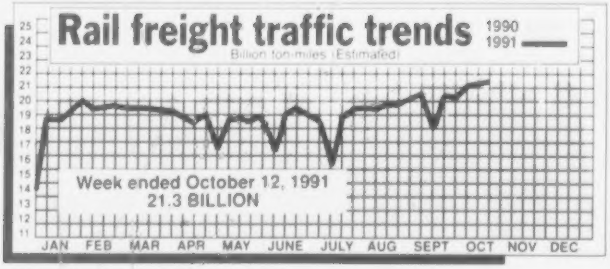
Estimated revenue ton-miles (billions)	20.4	20.5	21.8	21.4
% change from previous year	(1.4)	(4.2)	.9	1.4

Total:	1991	1990	% change
45 weeks	885.0	901.7	(1.9)

Intermodal traffic

	Nov. 9	Nov. 2	Oct. 26	Oct. 19
Trailers	67,346	71,156	69,220	66,265
Containers	64,512	66,698	67,399	62,015
Total	131,858	137,854	136,619	128,280
% change from previous year	3.0	3.8	4.9	(1.5)

		% change
Cumulative total: 44 weeks	5,593,885	1



Source: Association of American Railroads

Freight cars

	DELIVERED 3rd quarter 1991	 3rd quarter 1990	ORDERED 3rd quarter 1991	 3rd quarter 1990	ON ORDER AND UNDELIVERED July 1 1991	 July 1 1990
Built new by carbuilders	6,331	7,659	5,300	3,996	8,775	12,214
Built new in RR shops	0	0	0	0	0	0
Built new—Total	6,331	7,659	5,300	3,996	8,775	12,214
Rebuilt	1,780	1,706	573	1,706	1,148	0
TOTAL	**8,111**	**9,365**	**5,873**	**5,702**	**9,923**	**12,214**
Locomotives (new and rebuilt)	N/A					

Source: Transportation Div., AAR and American Railway Car Institute

The costs of railroad capital

By DR. HARVEY A. LEVINE

Vice President, Economics & Finance Department, Association of American Railroads

The Railroad Revitalization and Regulatory Reform Act of 1976 mandated that the Interstate Commerce Commission (ICC) make an annual determination of the revenue adequacy of the nation's freight railroads. The revenue-adequacy criterion adopted by the Commission is that a railroad's overall rate of return on investment (ROI) should at least equal its cost of capital (COC). Consequently, since 1978 the Commission has calculated an annual railroad cost of capital—calculations which have created a potentially significant problem for the railroad industry.

The definition

The COC is the minimum ROI which providers of capital require to undertake an investment—in essence, the capital-investment threshold ROI. It is an opportunity cost because it measures what investors sacrifice by not investing elsewhere. Investment funds generally flow to projects and companies where the expected returns are thought to at least equal the expected returns available in other investment opportunities, commensurate with the risk of investment. For-profit enterprises must have the expectation of earning adequate returns, or they will not attract the capital needed to sustain their operations.

The determination

In arithmetic terms, the COC is the average current cost of attracting both debt and equity capital, weighted by the current market values of each type of capital. For example, in 1990 a capital structure of 34.7% debt and 65.3% equity, a current cost of debt of 9.8%, and a cost of equity of 12.9%, resulted in a COC of 11.8% (.347 × 9.8% debt + .653 × 12.9% equity).

In calculating the COC, the ICC uses an investment grading process to measure the current yields of such outstanding debt as: Equipment Trust Certificates, Conditional Sales Agreements, bonds, notes, and debentures. The Commission has adopted a Discounted Cash Flow (DCF) methodology to calculate the cost of equity capital, summarized as the sum of the expected dividend yield and the expected five-year growth rate—the latter taken from a consensus of security analysts' estimates. For instance, an expected dividend yield rate of 3.7% and an expected growth rate of 9.2%, would result in a cost of equity capital of 12.9%. The DCF approach is commonly used by public utility regulators, is easy to understand, and employs publicly-available data. The rationale of DCF is that it measures investor expectations.

The record

Although the ICC has been calculating the COC since 1978, the data presented below begins in 1982 because for the 1978-1981 period, the Commission adopted an "acceptable" debt-equity ratio of 40%-60%. Beginning in 1982, the ICC began to calculate the actual market value of railroad debt and equity.

	Cost of Capital			Capital Structure	
Year	Debt	Equity	Total	Debt	Equity
1982	14.0%	19.8%	17.7%	37.0%	63.0%
1983	11.7	16.8	15.3	29.4	70.6
1984	12.8	17.3	15.8	33.9	66.1
1985	11.1	14.6	13.6	28.8	71.2
1986	8.9	13.3	11.7	34.8	65.2
1987	9.3	12.6	11.6	30.6	69.4
1988	9.7	12.6	11.7	31.0	69.0
1989	9.7	12.4	11.5	31.8	68.2
1990	9.8	12.9	11.8	34.7	65.3

As shown above, the COC has declined to a relatively stable level during the past five years, but its stability has an internal unstable element. From 1986 to 1990 the cost of debt has increased while the cost of equity has generally declined. This inverse trend is both disturbing and suspect.

The problem

The suspect decline in the cost of equity capital is supported by significant evidence that the entire COC has been understated in recent years. For example:

1. A number of companies in the financial community have calculated railroad costs of equity capital above the regulatory level.

2. The regulatory-determined cost of equity has been below that of the market in general, including public utilities, but there is no reason to believe that railroads are less risky than all industries as a whole, or public utilities in particular. In fact, the measure of railroad risk is consistently higher than that of the S&P 500 and public utilities.

3. The ICC cost of railroad equity of 12.9% in 1990, less the cost of risk-free debt (i.e., government securities) of 7.6%, equates to a market risk premium of 5.3%. This is significantly below the 7.3% and 7.2% market risk premium for 1990, calculated by two leading (investment banking) Wall Street companies.

4. The average 3.0% spread between the railroad cost of debt and equity in recent years is below that of both public utilities and other industries.

The understatement of the railroad COC may not have an immediate impact in the revenue-adequacy application because most railroads are still not revenue adequate, and even for those one or two that may be in a given year, a one-year determination does not necessarily result in adverse ICC decisions. However, there are other applications of the COC where an understatement could have a serious negative impact on railroads. First, an understated COC produces lower railroad costs as calculated by regulatory costing procedures; in turn, this results in higher revenue-cost ratios, thereby increasing ICC jurisdiction over rates. Second, an understated COC increases the limits on the railroads' ability to increase regulated rates, because the lower costs result in higher revenue contributions. And, third, an understated COC can adversely affect railroads in other regulatory proceedings such as abandonments, where opportunity cost is an issue. Somewhat ironically, the results of a regulatory understated COC can increase the riskiness of investing in railroads and thus, increase the market-determined, or "actual" cost of capital of the railroad industry.

The need

There appears to be a need for a broader regulatory approach in both understanding and calculating the railroad COC. A seemingly worthwhile research task would be to determine why the DCF model appears to understate the cost of equity capital to railroads. Is it possible that the expected relationship between growth rates and stock yields is upset by some particular aspect of a railroad industry which is competitive, and yet partially regulated? Does the composition and/or size of the railroad sample have an impact on the COC? Are there non-railroad operating factors in the price of railroad holding company stocks? These, and other questions, lend themselves to scrutiny. However, assuming that a regulatory quick fix will not occur, as regulatory proceedings are usually drawn-out affairs, the more immediate need is perspective—perspective from the ICC, financial analysts, and potential investors. All three groups must understand that although the Commission's annual calculation has an "official" ring to it, it has its limitations.

It must be understood that the COC calculation for revenue-adequacy determinations could have more serious consequences when used elsewhere; this should lead the Commission to examine not only its procedures for determining COC, but also its application of the COC in proceedings other than the revenue-adequacy determination. One idea to ponder is that the ICC adopt a "sanity test" for the COC calculation whereby unless there is strong evidence to the contrary, the railroad COC should not be below that of the market in general (e.g., the S&P 500). Similarly, the COC of a comparable group of companies, or industries, could be used as a surrogate for the railroad-specific COC.

The point is, in recent years the DCF model has produced results for the railroad industry which are, at best, highly suspect. Whether this is a short-term quirk or a more long-term condition due to some anomaly of the railroad industry remains to be seen. In the meantime, the issue should be explored and open minds should prevail.

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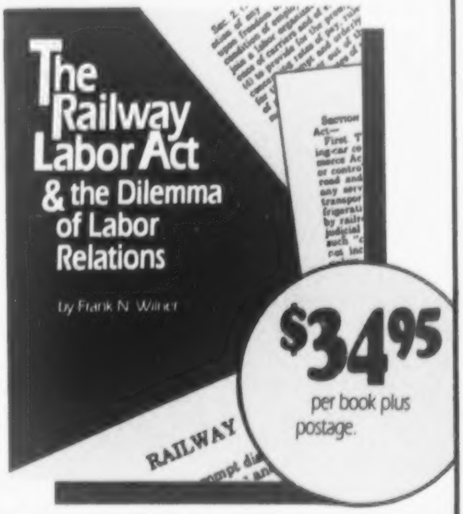

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January 1992

Railway Age

Incorporating Modern Railroads

Managing for profit, the Santa Fe way

R&D for better brakes

The transit bonanza, and what it means

Special report: Risk management →

Railroader of the Year

William H. Dempsey

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Short lines & regionals: A cautionary tale

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First at the NRLC, then at the AAR, Bill Dempsey took on two challenging assignments and handled both in a way that has made a lasting, positive impact on the industry.

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Johnstown America Corp., formerly Bethlehem's FCD, will improve two manufacturing plants and expand a profitable freight-car line.

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Market Outlook

Equipment

San Francisco Municipal Railway: Awarded an $82,087,695 contract to Breda Construzioni Ferroviarie of Pistoia, Italy, for 35 a.c. propulsion light rail vehicles. The contract carries an option for an additional 20 LRVs. The new cars will be 75 feet long, 9 feet wide, and 11 feet 4 inches high. Each will weigh approximately 76,000 pounds and will accommodate 62 seated passengers and up to 164 standees. General Electric will supply a.c. inverter propulsion packages.

Wisconsin Electric Power: Ordered 375 110-ton-capacity, aluminum sided, double tub coal cars from Thrall Car, with production scheduled for second quarter 1992. The cars were designed by TARCO, a joint venture between Thrall Car and Alcan Aluminum. Completion of the Wisconsin Electric Power order will bring the number of Thrall Car-built aluminum coal cars to more than 3,500.

Facilities

Los Angeles County Transportation Commission: Gave Morrison Knudsen notice to proceed on a $15.5 million contract to install 31 miles of track for a light rail line, part of the Green Line, running from Norwalk along the new Glenn Anderson Freeway to the I-105 Freeway interchange near Los Angeles International Airport. Construction will begin early this year and is to be completed in late 1993.

Los Angeles County Transportation Commission: Awarded a contract valued at more than $40 million to Union Switch & Signal to design, build, and install an automatic train control system for the Metro Green Line. US&S President Walter Alessandrini said the company will implement a fixed block control concept for this first fully-automated driverless light rail system in the U.S.

Metropolitan Transit Development Board (San Diego): Awarded a contract to Parsons Brinckerhoff Construction Services to provide construction management services for grade separations, at-grade track work, traction power substations, passenger stations, signaling, and overhead catenary for the $33 million, 3.6 mile El Cajon-Santee light rail extension.

Washington Metropolitan Area Transit Authority: Retained the architectural engineering firm of URS Consultants, Inc., as lead engineers for a 1.3-mile, $45 million extension of the Red Line to Glenmont, Md., from its present terminus at Wheaton. Bidding is scheduled for March 1993 with construction to be completed in 1996. URS' design will permit use of the New Austrian Tunneling Method (NATM), which substantially reduces construction costs and minimizes the risk of delays. URS prepared designs for the Glenmont Route in 1979 but the project was put on hold.

Revenue freight carloadings

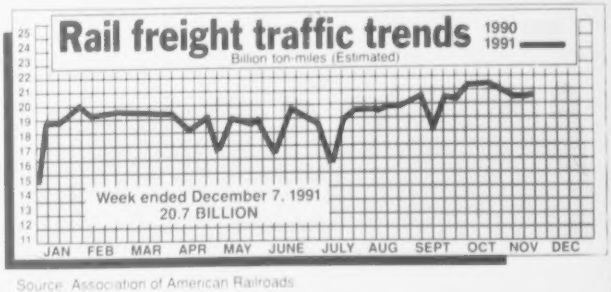
Commodity	Dec. 7 week	Nov. 30 week	Nov. 23 week	Nov. 16 week
Grain	31,025	22,709	29,491	29,709
Other farm products	2,521	2,127	2,228	2,386
Metallic ores	15,695	14,499	17,609	15,886
Coal	127,436	103,546	140,993	131,933
Crushed stone, gravel and sand	11,906	8,128	12,401	13,092
Nonmetallic minerals	7,809	7,249	7,353	8,858
Grain mill products	10,868	8,841	9,902	9,946
Food and kindred products	9,469	7,740	9,335	9,329
Primary forest products	9,353	6,779	9,893	9,609
Lumber and wood products	5,305	4,632	5,913	5,416
Pulp, paper and allied products	10,302	10,139	10,108	9,476
Chemicals and allied products	28,930	24,139	28,742	27,701
Petroleum products	5,288	3,985	5,206	5,415
Stone, clay and glass products	8,271	6,557	8,537	8,783
Coke	5,415	5,120	5,415	5,442
Metals and products	8,724	8,944	9,899	9,989
Motor vehicles and equipment	18,119	12,155	17,875	17,801
Waste and scrap materials	8,035	6,315	8,765	8,819
All other carloads	6,485	5,021	7,408	6,946
Total Cars Loaded	**330,966**	**268,625**	**347,073**	**336,536**
% change from previous year	(2.1)	(22.8)	(26.6)	(1.5)

			% change	
Cumulative total: 49 weeks		15,761,309	(4.8)	
Estimated revenue ton-miles (billions)	20.7			
% change from previous year	(1.0)			
Total:		**1991**	**1990**	**% change**
49 weeks		964.7	838.1	(15.1)

Intermodal traffic

	Dec. 7	Nov. 30	Nov. 23	Nov. 16
Trailers	68,568	53,475	69,876	67,979
Containers	59,014	52,613	65,377	64,531
Total	**127,582**	**106,088**	**135,253**	**132,510**
% change from previous year	5	(17.9)	37.0	(4.7)

		% change
Cumulative total: 49 weeks	5,894,705	4



Source: Association of American Railroads

Bolivian National Railways: Awarded a $4 million contract to Canac International of Montreal, a division of Canadian National Railways, to assist in reorganizing Bolivia's railway system into "a customer-oriented, commercially-viable transportation company." Canac will be assisted in the project by Germany's Deutsche Eisenbahn-Consulting GmbH.

Passenger-car market at-a-glance

These cars were delivered in 1991:

Purchaser	No. of cars	Type	Builder
Baltimore (MTA)	6	Light Rail	ABB
Baltimore (MARC)	25	Commuter	Sumitomo/Nippon Sharyo
	12	Rebuilt Commuter	ABB
Boston (MBTA)	71	Bi-Level Commuter	Kawasaki
Chicago (CTA)	4	Rapid Transit	Morrison-Knudsen
Connecticut (ConnDOT)	20	Commuter	Bombardier
Fort Lauderdale (Tri-Rail)	3	Bi-Level Commuter	Bombardier
Long Island	8	Bi-Level Commuter	MitsuiUSA/Tokyu Car Co.
New Jersey (NJ Transit)	50	Commuter	Bombardier
New York (Metro-North)	10	Commuter	Bombardier
New York (NYCTA)	42	Rebuilt Rapid Transit (R33)	NYCTA
	60	Rebuilt Rapid Transit (R44)	NYCTA
	40	Rebuilt Rapid Transit (R44)	Morrison Knudsen
	484	Rebuilt Rapid Transit (R46)	Morrison Knudsen
Philadelphia (SEPTA)	1	Light Rail	ABB Amtrak
Portland (Tri-Met)	2	Vintage Trolley	Gomaco
Sacramento	8	Light Rail	Siemens-Duewag
Toronto (GO Transit)	22	Bi-Level Commuter	UTDC
Vancouver (BC Transit)	16	ALRT	UTDC
Washington D.C. (WMATA)	2	Rapid Transit	Breda

Work goes forward on this undelivered backlog:

Purchaser	No. of cars	Type	Builder
Amtrak	140	Bi-Level Intercity	Bombardier
Baltimore (MTA)	29	Light Rail	ABB
Boston (MBTA)	86	Rapid Transit	Bombardier
Chicago (CTA)	252	Rapid Transit	Morrison Knudsen
Denver (RTD)	8	Light Rail	Siemens Duewag
New York (Metro-North)	48	Commuter	Morrison Knudsen**
New York (NYCTA)	80	Rebuilt Rapid Transit (R44)	NYCTA
	98	Rebuilt Rapid Transit (R44)	Morrison-Knudsen
	9	New Technology Rapid Transit	Bombardier
	10	New Technology Rapid Transit	Nissho Iwai (Kawasaki)
Northern Indiana (NICTD)	7	EMU Coach	Sumitomo/Nippon Sharayo
	10	EMU Trailer	Sumitomo/Nippon Sharayo
Philadelphia (SEPTA)	25	Light Rail	ABB Traction
Portland (Tri-Met)	2	Vintage Trolleys	Gomaco
San Diego (MTDB)	75	Light Rail	Siemens Duewag
San Francisco (MUNI)	35	Light Rail	Breda
So. California (SCRRA)	70	Bi-level commuter	UTDC
	10	Bi-level commuter	UTDC
St. Louis (Bi-State)	31	Light Rail	Siemens Duewag
Washington, D.C. (WMATA)	98	Rapid Transit	Breda

*Remaining Option

**Purchased with Connecticut DOT

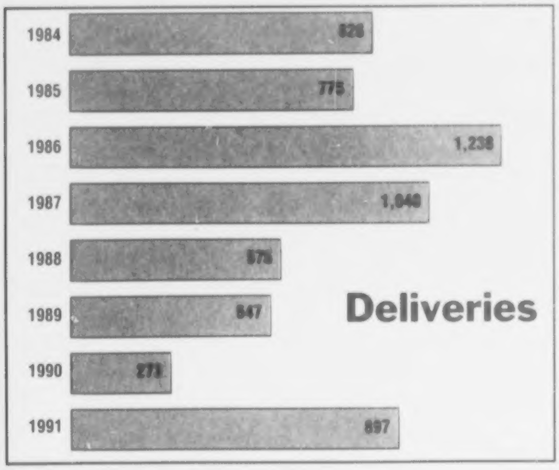
Orders likely to develop in 1992:

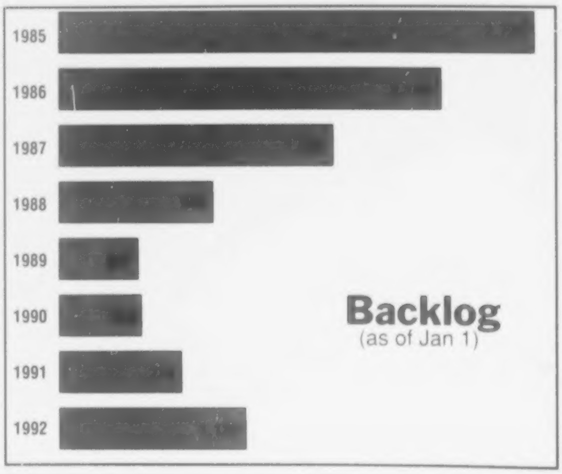
Purchaser	No. of cars	Type
Amtrak	100	Intercity
Baltimore (MBTA)	56	Rapid Transit
Chicago (CTA)	118	Rapid Transit
Chicago (METRA)	173	Commuter
Dallas (DART)	40	Light Rail
Fort Lauderdale (Tri-Rail)	9	Bi-Level Commuter
Long Island Rail Road	32	Commuter
Philadelphia (SEPTA)	220	Commuter
Portland (Tri-Met)	39	Light Rail
San Francisco (BART)	50	Rapid Transit
So. California (CalTrans/SCRAA)	24	Bi-level commuter
Toronto (TTC)	216	Rapid Transit
Vancouver (BC Transit)	60	ALRT

The five year (1993-97) outlook:

Purchaser	No. of cars	Type
Amtrak	0-75	Bi-level Intercity
	175	Intercity
	26	High Speed train sets
Atlanta (MARTA)	24*	Rapid Transit
Baltimore	50-100	Commuter
Boston (MBTA)	100	Light Rail
Calgary	7-20	Light Rail
Chicago (CTA)	0-200	Rapid Transit
Chicago (METRA)	158	Commuter
	20	Gallery/EMU
Dallas (DART)	40-72	Light Rail
Fort Lauderdale (Tri-Rail)	10	Commuter
Long Island Rail Road	112	Commuter
New York (Metro-North)	31	Commuter
New York (NYCTA)	0-200	Passenger
Philadelphia (SEPTA)	80-112	Light Rail
Portland (Tri-Met)	0-12	Light Rail
Sacramento	50-90	Light Rail
San Francisco (BART)	50-200	Rapid Transit
San Francisco (MUNI)	0-10	Light Rail
So. California (SCRRA)	17-30	Bi-Level Commuter
St. Louis	5	Light Rail
Toronto (TTC)	286*	Rapid Transit/EMU
Washington, D.C. (WMATA)	100-200	Rapid Transit

*in 97





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February 1992

Railway Age

Incorporating Modern Railroads

Better bearings for higher speeds and heavier loads

Union Pacific's quest for quality

1992 Light Rail Planner's Guide

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1992 Light Rail Planner's Guide

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Baltimore is a dramatic example of the role rail can play in urban renewal. To existing rail commuter and rail rapid transit lines, Baltimore will soon add a light rail link.

Light rail in North America......p. 45
The modern light rail boom which began in Edmonton, Alta., a quarter-century ago continues to gain momentum, and the number of systems will have tripled by the end of the century.

Light rail suppliers......p. 56
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22 Union Pacific's quest for quality
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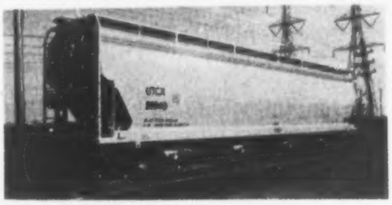

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Cover: Photo by Scott Snell

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Market Outlook

Equipment

CN North America: Placed a $24 million (C) order with National Steel Car for 347 new and rebuilt autocarriers, to be outfitted with multi-level racks and enclosures by Thrall Car.

CP Rail: Took delivery in January of 400 new 48-foot containers from Provincial Trailer Rentals Inc. of Mississauga.

Burlington Northern: Will buy 500 jumbo covered hopper cars for second quarter delivery. Like 1,000 cars acquired in 1990, these cars will have 286,000-pound weight-on-rail rating, allowing them to carry about 11 tons more lading than can be handled in a standard jumbo car. BN expected to go out for bids by Feb. 1.

Union Switch & Signal: Has been awarded contracts to supply the Union Pacific Railroad, the Chicago Transit Authority, and the Massachusetts Bay Transit Authority with its microprocessor-based cab signaling systems (Microcab™). UP ordered Microcab sets for new locomotives being produced by General Motors Diesel Division and GE Transportation Systems; value of the two contracts is $2 million. A $4 million CTA contract calls for Microcab sets with an option for additional installations in vehicles being produced by Morrison Knudsen. The MBTA contract, also valued at $4 million, is for more than 100 Microcab sets for transit cars being built by Bombardier.

Facilities

VIA Rail: Awarded a contract to Denver-based PS Technology, Inc., a subsidiary of Rio Grande Industries, for an automated crew scheduling and timekeeping system. Installation of VIA's SCAT (System Crew Assignment and Tracking) is scheduled for June. Similar systems are in operation on Denver & Rio Grande Western, Southern Pacific, Kansas City Southern, Soo Line, Grand Trunk Western, Illinois Central, Montana Rail Link, Norfolk Southern, Canadian Pacific, and NJ Rail Transit.

Newark International Airport: Work began in January on a $378 million monorail system with initial contracts awarded to Terminal Construction Corp. of Wood Ridge, N.J., $16.9 million for four parking lot stations; Omni of New York City and Vanessa Construction of New City, N.Y., $14.9 million for monorail station in each of three terminals; and Trumid Construction Co. of Ardsley, N.Y., $8.8 million for a maintenance and control facility.

Capital Expenditures

Norfolk Southern: NS's 1992 rail capital expenditures budget totals $739.9 million, a 10.5% increase over the $669.5 million initially budgeted for 1991. The new budget comprises $570.3 million in new projects and $169.9 million carried over from projects authorized in previous years. Roadway improvements in 1992 will accounts for $519.1 million, of which $250.5 million will go for new rail and new cross ties. Also included is $29.7 million for new intermodal terminals. Equipment investment will total $220.8 million, including $68.5 million for 50 new locomotives, $42.9 million for new freight cars, and $67.2 million for freight car rehabilitation.

Revenue Freight Carloadings

Commodity	Jan. 18 week	Jan. 11 week	Jan. 4 week	Dec. 28 week	Dec. 21 week
Grain	27,864	31,424	25,134	23,187	32,038
Other farm products	1,665	1,511	1,165	1,280	2,180
Metallic ores	13,935	14,181	14,004	16,737	16,741
Coal	122,771	125,917	100,249	85,941	133,964
Crushed stone, sand and gravel	8,958	10,432	8,075	4,912	10,210
Nonmetallic minerals	7,364	7,913	7,071	6,559	8,157
Grain mill products	10,417	10,466	9,057	8,873	10,491
Food and kindred products	9,109	9,103	6,817	6,433	9,553
Primary forest products	8,921	9,839	7,969	5,325	10,242
Lumber and wood products	5,776	5,541	4,069	3,376	5,597
Pulp, paper and allied products	10,489	10,812	11,692	11,022	9,536
Chemicals and allied products	28,958	28,943	26,843	22,277	29,385
Petroleum products	5,036	5,230	4,260	3,839	5,429
Stone, clay and glass products	7,662	7,975	6,551	5,275	7,045
Coke	5,668	5,355	5,437	5,503	5,188
Metals and products	10,054	10,099	8,708	7,183	9,747
Motor vehicles and equipment	14,481	11,975	4,501	4,236	16,080
Waste and scrap materials	8,191	8,475	5,361	4,447	8,105
All other carloads	5,757	6,037	4,018	3,289	6,419
Total Cars Loaded	**313,076**	**321,228**	**260,981**	**229,704**	**336,085**
% change from previous year	(3.6)	4.0	9.9	15.0	7.0

		%change
Cumulative total: 3 weeks	894,314	2.7

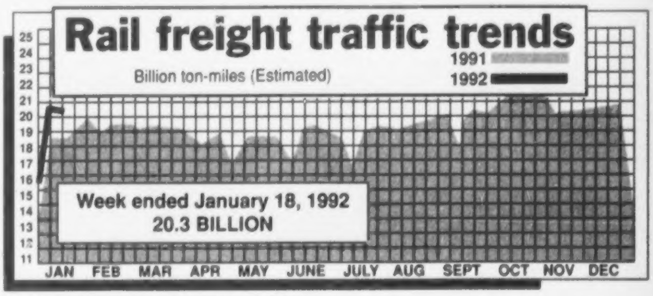
	Jan. 18	Jan. 11	Jan. 4	Dec. 28	Dec. 21
Estimated revenue ton-miles (billions)	20.3	20.7	16.7	14.1	21.0
% change from previous year	(.5)	6.7	12.8	16.5	9.4

Total:	1991	1990	% change
3 weeks	57.7	54.6	5.7

Intermodal Traffic

	Jan. 18	Jan. 11	Jan. 4	Dec. 28	Dec. 21
Trailers	58,814	57,341	41,105	39,003	67,772
Containers	62,258	64,651	47,176	43,319	63,035
Total	**121,072**	**121,992**	**88,281**	**82,322**	**130,807**
% change from previous year	2.6	1.9	5.4	.9	5.2

		% change
Cumulative total: 3 weeks	331,345	3.1


Rail freight traffic trends

Billion ton-miles (Estimated)

Week ended January 18, 1992
20.3 BILLION

Source: Association of American Railroads

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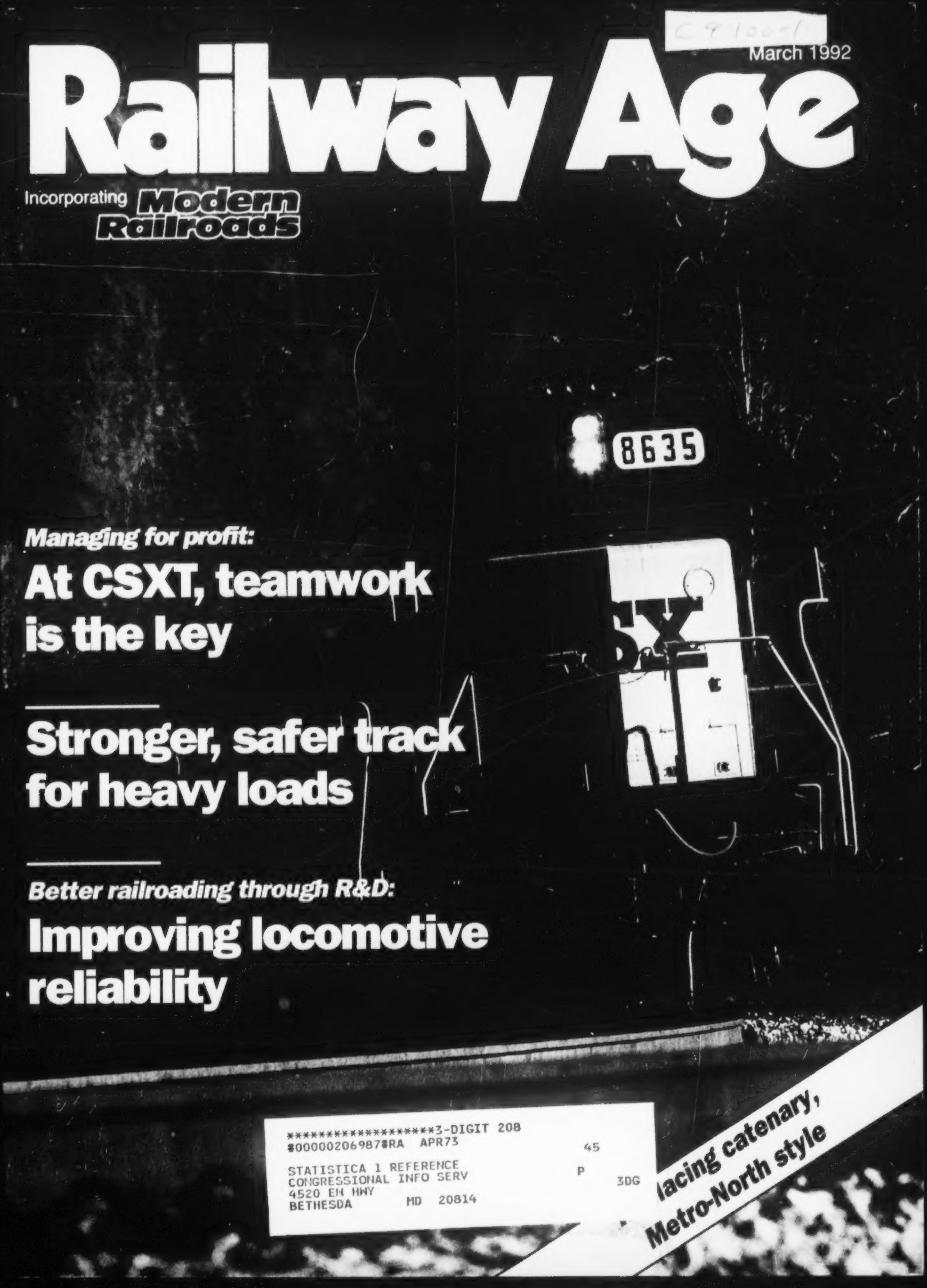
March 1992

Railway Age

Incorporating Modern Railroads



Managing for profit:

At CSXT, teamwork is the key

Stronger, safer track for heavy loads

Better railroading through R&D:

Improving locomotive reliability

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lacing catenary,
Metro-North style

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27 Managing for profit: At CSXT, teamwork is the key

"Teamwork between operations and sales/marketing" is more than a pious hope at CSXT. It's a way of life—and a successful one.

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Improved flaw-detection, cleaner rail steels, better ties and fastening systems—all will contribute toward safer track for heavier loads.

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39 Big switch at Switch

A Total Quality program, increased capital investment, and a quadrupled R&D budget have helped an aggressive new management produce a turnaround.

47 TRRA: Facing up to change

The Terminal Railroad Association of St. Louis now handles a substantial number of through trains and is preparing for more.

51 From penury to profit

Alabama State Docks' Terminal Railway has taken down the "For Sale" signs, thanks to new management and a dedicated work force.

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The commuter road expects to reap operating advantages plus lower costs as it goes to constant tensioned catenary on a portion of its New Haven line.

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A Caltrain survey could narrow the data gap that commuter rail planners confront in planning new or expanded services.

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Market Outlook

Equipment

Amtech: Received orders in January for 275,000 automatic equipment identification (AEI) tags valued at $6-7 million. Conrail, Norfolk Southern, and CSX Transportation were among the purchasers.

Massachusetts Bay Transportation Authority: Awarded a $25.6 million contract to Union Switch & Signal to design, supply, and install an integrated transit control system.

New York City Transit Authority: Heckler Electric Co. will install Avtec's ACCESS (Advanced Concept Communications Exchange & Signaling System) at NYCTA's Jay Street Station — the first transit application of the system, which features color touchscreen control of radio circuits, telephone lines, and public address systems.

Facilities

Dallas Area Rapid Transit: Awarded an $86.6 million contract to S.A. Healy Co. to construct the 3.5 mile tunnel segment of the DART light rail system. The Healy bid was about $35 million below DART's engineering estimate. The DART board also approved the $51 million purchase of 18 miles of right-of-way from the Santa Fe, including a 40 acre freight yard that will be used for a light rail vehicle service and inspection facility.

Sea-Land Service/CSX Intermodal: Will upgrade and more than double the capacity of the intermodal terminal at Little Ferry, N.J. which CSXI operates for Sea-Land. The project, which is scheduled to begin this summer, and take about two years to complete, will increase double-stack car spots from 25 to 69 and increase storage space from 460 to 1,046 containers. Storage space for 180 chassis will be added. The expansion announcement last month followed the completion of a purchase transaction between CSXI and the New York, Susquehanna & Western. In that transaction, CSXI paid $21 million for property owned by NYS&W, including 24 acres that comprise the present Little Ferry facility.

Revenue Freight Carloadings

Commodity	Feb 15 week	Feb 8 week	Feb 1 week	Jan 25 week	Jan 18 week
Grain	30,351	31,148	29,923	30,623	27,864
Other farm products	1,678	1,806	1,737	1,779	1,665
Metallic ores	13,763	13,928	14,159	13,433	13,935
Coal	123,374	124,679	125,849	126,759	122,771
Crushed stone, sand and gravel	10,494	10,155	10,108	9,976	8,958
Nonmetallic minerals	8,229	8,660	7,646	7,699	7,364
Grain mill products	10,783	10,582	10,333	10,207	10,417
Food and kindred products	9,275	9,283	8,987	9,275	9,109
Primary forest products	9,287	9,222	9,336	8,769	8,921
Lumber and wood products	5,901	5,768	6,576	5,988	5,776
Pulp, paper and allied products	10,598	10,490	10,468	9,996	10,489
Chemicals	29,824	27,964	29,166	28,409	28,958
Petroleum products	5,374	5,198	4,815	4,973	5,036
Stone, clay and glass products	8,184	8,430	8,163	7,693	7,662
Coke	5,312	5,162	5,539	4,933	5,668
Metals and products	9,884	10,481	11,273	10,095	10,054
Motor vehicles and equipment	16,217	16,731	17,452	14,917	14,481
Waste and scrap materials	8,386	8,214	8,237	8,158	8,191
All other carloads	6,175	6,802	6,732	5,399	5,757
Total cars loaded	**323,089**	**324,503**	**326,501**	**319,081**	**313,076**
% change from previous year	(0.7)	0.9	3.0	1.6	(3.6)

		%change
Cumulative total: 7 weeks	2,187,525	1.8

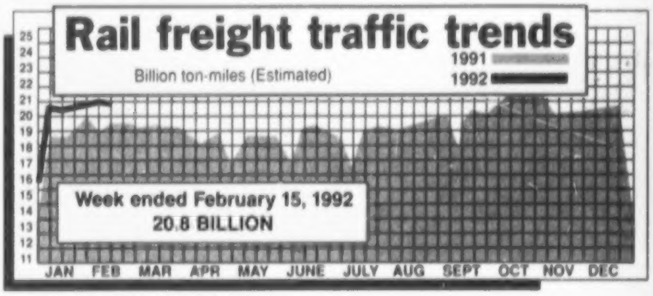
	Feb 15 week	Feb 8 week	Feb 1 week	Jan 25 week	Jan 18 week
Estimated revenue ton-miles	20.8	21.0	20.9	20.6	20.3
% change from previous year	2.0	4.5	4.5	5.1	(0.5)

Total:	1991	1990%	change
7 weeks	141.0	134.6	4.8

Intermodal Traffic

	Feb 15	Feb 8	Feb 1	Jan 25	Jun 18
Trailers	63,609	58,593	63,097	59,101	58,814
Containers	66,417	62,928	66,139	62,727	62,258
Total	**130,026**	**120,211**	**129,236**	**121,828**	**121,072**
% change from previous year	10.5	1.1	5.5	3.8	2.6

		% change
Cumulative total: 7 weeks	833,530	4.3



Source: Association of American Railroads

Freight Cars

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	4th quarter 1991	4th quarter 1990	4th quarter 1991	4th quarter1990	Jan 1, 1992	Jan 1,1990
Built new by carbuilders	5,943	7,541	6,383	6,655	9,215	11,328
Rebuilt	377	1,083	298	1,083	50	0
Total	**6,320**	**8,624**	**6,681**	**7,738**	**9,265**	**9,923**

Locomotives (new & rebuilt): Not available
Source: American Railroad Car Institute

CSXT: Managing for profit

"The key to everything we're doing is teamwork between operations and sales/marketing. We're pleased with what we see in our customer surveys."

Alvin R. "Pete" Carpenter became president and chief executive officer of CSX Transportation on Jan. 1. He takes over a railroad that until recently had an unusual organization structure, now changed to a structure better designed to promote what Pete Carpenter wants: Teamwork. But he also takes over a railroad that has been on the move. CSXT was the first major road to consolidate train control functions in a single location. It is creating a customer service center that has already won international acclaim. Its safety record has improved dramatically. It has clearly-defined "quality" goals. Its new president and CEO may be new to his job, but he's a career employee with a service record dating back to 1964 on a CSXT predecessor road. In conversation with *Railway Age* Senior Editor Gus Welty, Pete Carpenter talks about CSXT's goals and about how it plans to reach them.

RAILWAY AGE: What are the strategies, the tactics, that CSX Transportation will be using to improve profitability?
CARPENTER: Our strategy is built around improving return on invested capital, at least to a level where we are indeed earning our cost of capital. We intend to improve cash flow significantly. And we fully intend to reduce our operating ratio by about five points in the next three years.

RA: Your operating ratio last year was 87.4, adjusted. . .
CARPENTER: Yes, after adjustment for the productivity charge we took in the fourth quarter. Our intention is to take it down to 82. We also have some lease costs in our ratio that other railroads don't have. Our real target is to be at about 80, as a railroad. To do that, we're going to have to do a number of things.

RA: Such as?
CARPENTER: We're going to have to continue improving our safety record. Right now, we're second in safety among Class I railroads on personal injuries, and we're first in safety based on derailment frequency. Just a few years ago, we ranked close to last. We intend to be the best in both categories. We have to improve our quality of service. We survey our customers annually, and we have moved up steadily over the past several years in terms of our service reliability, acceptance of cars and freight damage prevention. We intend to improve further in these areas.

"Deregulation has taught us that no one owes us any business. We have to earn the business."

—Pete Carpenter

RA: What about the revenue side?
CARPENTER: Obviously, you're not going to improve revenue unless you're performing the right kind of service. We have been the leader in increasing revenue yield per carload, and we intend to continue in that pattern. And, while in the early 1980s railroads were not able to do much through rate increases, in the past two or three years we have been very successful in getting some portion of inflation back through rate increases. Our target is to recover at least 75% of inflation through this method. To put it simply, our strategy in terms of safety and service and operating performance is to be the best in every category.

RA: What about marketing strategies?
CARPENTER: We define our markets in narrow segments, not broad groupings such as chemicals or automobiles. We're convinced that success is in the details. We talk about specific market segments—for example, plastic pallets in the chemicals market, and even further down to specific origin-destination movements. We don't talk about the motor-vehicle business as a whole. We talk about General Motors or Ford business into Florida, as a specific example, and we also talk about the movement of used vehicles from Florida into the northern areas where many of them are sold. That's the kind of close focus we're bringing to each element of sales and marketing and operations.

RA: Every railroad has problems with surplus capacity, equipment and plant. What are you doing to attack this problem?
CARPENTER: Traditionally, trucks have marketed their surplus capacity much better than railroads. Utilization of surplus capacity is a primary target of ours. We've had some success, as one example, in moving coal in one direction and using the cars for ore on the backhaul. We've also been successful in moving fertilizer from Florida and using the cars to move grain products, primarily chicken feed, back into the Southeast. We have a problem with short-haul, low-margin gravel movements and we have surplus capacity of coal cars between December and April when the Great Lakes are frozen. One of the questions we're working on now is, can we use

these surplus cars, with opportunity pricing, to move gravel during the winter months? As for excess train capacity, we're looking at the I-95 market on the Eastern Seaboard. If we have excess capacity on some of our dedicated trains between Philadelphia and Florida, for instance, can we work with our intermodal unit to fill some of that capacity? We're looking at a lot of strategic pricing initiatives as they relate to excess capacity of all kinds.

RA: What does the CSXT strategic plan call for in terms of capital improvements over the next five years? What will be emphasized?
CARPENTER: The $525 million to $650 million range is the general outlook we currently see in capital spending annually over about the next five years. The focus will remain on recapitalizing those assets which are essential to our core network.

RA: Still, your emphasis seems to be on making better use of what is. . .
CARPENTER: Frankly, I think that the easy way to run a railroad into the ground is to solve every problem with more capital. We are absolutely committed to producing more cash flow and better returns for our shareholders. Given that, we always have to be looking for managerial solutions, as opposed to capital solutions, for the problems and issues that we face.

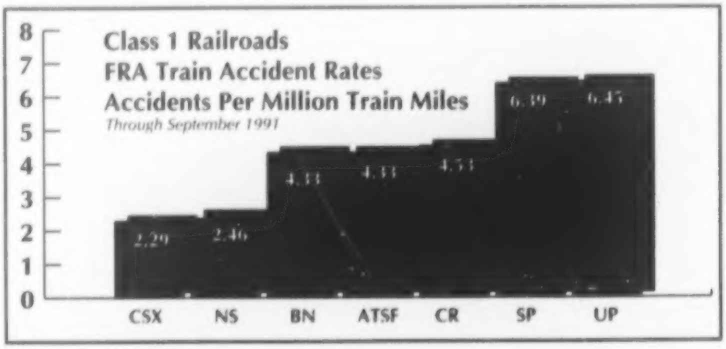
RA: Managerial solutions. What excites you?
CARPENTER: I think the most exciting thing for railroads in the 1990s is the use of leading-edge technology in management information systems to assist us in using our assets more efficiently and effectively. You know the statistics, as to how much time a boxcar, gondola, or any other car type actually spends in motion. Locomotives cost more that $1 million apiece and it would be rare to find a locomotive actually being used, hauling freight, more than 50% of the time. A locomotive spends much of its time in a siding awaiting fuel and servicing, in a shop, or in a yard awaiting movement on a linehaul train. In each of these areas lies a tremendous potential for the railroad industry to find ways to truly utilize assets effectively.

RA: But improvements have been made in these areas. . .
CARPENTER: We've come a long way, but we haven't solved the problems yet. Having said what I've said about utilization — interesting objectives and noble goals—how do you track things? We know this is critically important because all organizations manage what they measure. At CSXT, our investments in management information technologies are key to making dramatic progress in asset utilization. By business line, we now track improvement in aggregate contribution by business module and improvement in equipment utilization per car-day in terms of each module. The only way we're going to move the numbers in the right direction is by utilizing assets better—for example, in getting more turns per car and increasing the time locomotives are productive, hauling freight.

RA: What are you doing to get to these goals?
CARPENTER: The key to everything we're doing is teamwork between operations and sales/marketing. We've focused on a number of areas. Grain is an example where we have made significant improvements over the past several years. In 1991, unit grain train performance improved by 6.4%, or more than one day transit time, for a saving of more than 43,000 car-days. To give you a frame of reference for some of this progress, in 1984 we had virtually no unit train feed grain movements. Today, nearly one-fourth of our feed grain moves occur in blocks of 65 or more cars and 88% are in scheduled blocks of 15 or more cars.

RA: You talk about teamwork. . .
CARPENTER: We're very optimistic about this business and we believe that our quality initiatives in recent years have served us well. I feel very, very good about our management team. Jerry Davis [CSXT chief operating officer] is not only a top-drawer operating officer, he's also very sensitive to the needs of our customers. Those same attitudes go up and down the line. As you well know, it was not always that way in the railroad business. But deregulation has certainly taught all of us that no one owes us a return, no one owes us any business. Each and every day, we have to get up and earn the business that our customer base can provide, for that day in the future. We're pleased with what we see in our customer surveys, and we're proud of the awards we've won from our customers. We're proud that our Customer Service Center recently won an international award, naming it as the best among non-manufacturing companies and the world. We intend to work very hard to continue to earn the trust we have.

RA: Some years ago, the railroad was split into three entities, CSX Rail Transport, CSX Distribution Services, and CSX Equipment, each of them with a president, one based in Jacksonville and two based in Baltimore. Now, CSXT has moved back to a more traditional kind of organization. Was the three-unit organization a noble effort that didn't work?
CARPENTER: I'm not sure how noble it was, but it was a well-intentioned effort that didn't work. There is one business here, and that structure attempted to make it into three or four businesses, four if you include CSX Technology. I had some experience with that structure, because I headed Rail Transport and then Distribution Services. Most of the successes that we're proud to tell you about today came about as the



result of tremendous teamwork between sales/marketing and operations. These are the things that have driven our bottom line in a positive way. But when your people are apart, the problems of distance, coupled with separate reporting relationships, it just accentuates the natural differences that sales/marketing has in any organization in working with counterparts in production/operations. Over the past year or so, we've been moving away from the three-unit structure. What we have now is serving us well, and I think it will continue to serve us well.

"If you start adding up the opportunities, it appears that there will be good news for American coal producers."

RA: But CSX Intermodal is a separate organization...
CARPENTER: There, I take a different view. Separating CSX Intermodal into a business unit has been good. It's a different business from the railroad business. Much of CSXI's traffic never touches the railroad because they serve as a third party for a lot of business that moves on western carriers. Certainly, some of the business moves over us or Conrail or Norfolk Southern in the East. But CSXI is national in its operation. And it has a close working relationship with Sea-Land (another CSX unit). So it's good, I believe, to have the CSXI group standing apart, using their entrepreneurial skills to maximize their profit and return. And CSXT has a good, close working relationship with CSXI.

RA: Within CSXT, though, you've set up at least one separate entitiy...
CARPENTER: In a way, yes, our fertilizer business in the Bone Valley of Florida, which is about a 40-square-mile area for phosphate business. It has a unique franchise among our markets. We set up a separate business unit so that they could be free from the bureaucracy of the whole railroad and concentrate on improving the use of their assets, their contribution per car-day, their aggregate contribution in that business segment. We've given them a lot of latitude. Ultimately, of course, what they do fits into the larger organizational picture. But we have systems set up for all of their budgets, so that they're able to make the trade-off decisions, whether to pursue a given piece of business. That decision-making process is more responsive than it would be, coming from Jacksonville, where we deal with broader costs and structures. We're watching that operation very carefully, and we're confident that they're going to make the Bone Valley operation more profitable for CSXT.

RA: Does that kind of handling apply elsewhere?
CARPENTER: Not really. The coal business, for example, originates in a fairly compact area. But it literally goes all over our system. So we don't have a comparable situation in any of our other bulk-commodity businesses and certainly not in our merchandise business.

RA: What about the future of coal and CSXT?
CARPENTER: We're looking at modest growth, about 2% per year.

RA: But isn't the export market one with greater potential?
CARPENTER: That's the one significant opportunity that could change that 2% number. But I want to plan this business, for our shareholders, in a manner that does not count on bonanzas from the revenue side because a lot of times those bonanzas have a way of being over-receding. But yes, there are certainly opportunities out there that seem promising.

RA: Specifically?
CARPENTER: England mines about 80 million tons of coal a year at prices a bit more than $100 a ton, F.O.B. the mine. We've been moving coal to that market, from a base of about zero four of five years ago to about three million tons a year now, primarily for steel production and to utilities.

RA: What about the rest of the "new" Europe?
CARPENTER: In the former West Germany, they mine 75 million to 85 million tons of hard coal per year. Only three or four mines can produce coal as low as $135 per ton at the mine. Most of their mines produce coal at closer to $200 per ton. Mines in the former East Germany produce about 270 million tons of brown coal per year, but it has a sulphur content that is totally unacceptable by today's German standards, so Germany has announced its intention to phase out that coal. At the same time, Germany is at a crossroads, so far as continuing policies of providing subsidies and using employment of guest labor are concerned. They have had heavy subsidies in agriculture and mining. Now, the new Germany is embracing free-market principles. As it does, the country is shutting down facilities that require heavy subsidies. And with unemployment high, policy questions are also being raised about the guest, or immigrant, workers who do most of the work in the mines.

RA: And the opportunity that this creates?
CARPENTER: The Germans have said that they intend to move away from the use of German coal. One indication of the seriousness of their intent might be their purchase of a 50% interest in our largest coal producer, Consolidation Coal. We're very confident that we will share in the growth of American coal exports into Europe. If you start adding up the opportunities—all the production going away in the next decade or so, 80 million tons in England, 80 million in tons in the former West Germany, 270 million tons of high-sulphur coal in the former East Germany—it appears that there will be good news for American coal producers, for CSX Transportation and, I might add, for our friends at Norfolk Southern.

RA: And this American coal can be landed in Europe at...
CARPENTER: At less than$60 per ton. How big is the opportunity? It's big. But my forecast of 2% growth in coal traffic essentially ignores it, even though the export growth is probably going to come. Why? Because I'm not going to start planning for this company on the basis of what appears to be a tremendous bonanza out there in the future.

RA: What about domestic coal movements, and the impact of clean-air legislation?

CARPENTER: You've heard the initial estimates about all the western, low-sulphur coal that would be moving into the East and Southeast. I don't think anyone in the West, producer or railroad, is as optimistic about that as they were on the day the legislation was signed. The fact is that a number of the utilities they thought would use western coal are moving instead toward installation of scrubbers. CSXT has held a steady course on this, because of our experience and because of what our consultants tell us—and as you know, I've spent a number of years dealing with coal traffic, here and at Chessie System. Our conclusion is that by 1995 we will gain movement of 17 million to 20 million tons of coal, with our low-sulphur Southern Appalachian coal displacing some high-sulphur coal not mined on our lines. We estimate that we would lose some higher-sulphur tonnage but gain some lower-sulphur tonnage and, on balance, would have that net gain. But on a base of moving 190 million tons of coal per year, that domestic gain isn't huge.

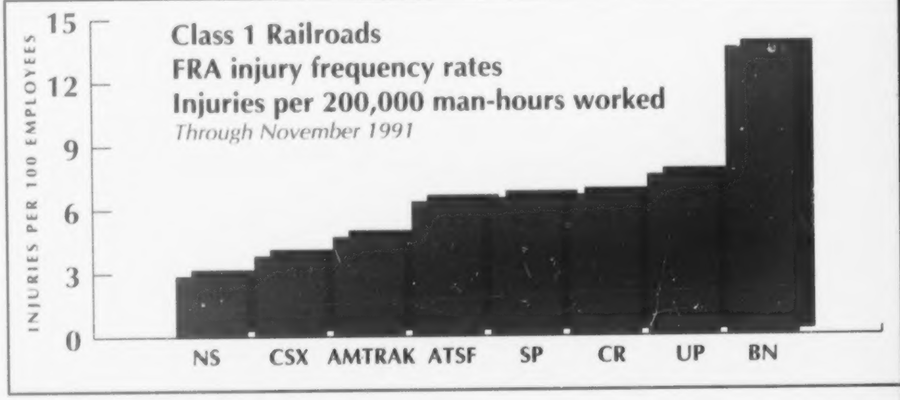
RA: What about your ability to reduce costs, specifically labor costs, as we were talking about with respect to the operating ratio?

CARPENTER: In the fourth quarter of 1991, we took a restructuring, productivity charge of $647 million, 90% of which was for investment in labor savings. Nobody in my chair moves as fast as he would like to in this area. But we've been on the leading edge, I think, and if you put our average crew size up against that of other major railroads, you'll find that to be true. But these things never move quickly enough. It's been a tortuous process for our industry and our railroad, moving from a crew of five persons down to where we are today. Now, we're moving to where we have to be, to a conductor-only train crew on through freights, where we're competing with trucks and having a rough time, largely because of our higher labor costs.

RA: What about management reductions?

CARPENTER: At the time of deregulation and at the time of the merger of Chessie System and Seaboard System, we had a large bureaucracy. We've made great progress. We've gone through a 20% downsizing, and in January we announced that we were planning to reduce management ranks by 8%. Additional reductions are planned for the next couple of years, as we continue to become efficient, pare down and flatten the organization. We want to empower people at lower levels to make decisions and get away from the old pyramid, quasi-military organization that has kept railroads caught up in their own underwear for decades.

RA: Back to technology. Do you really see the MIS side as where the opportunities are?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CARPENTER: I do. You've seen the kind of technology we're employing at our Customer Service Center and at our Transportation Control Center. It's not dreaming the impossible to think what advances in that kind of technology, five years out, might do for your signaling system or for other kinds of control and communications systems. Yes, I think there are technological opportunities in the design of new coal cars and other types of equipment. There are some exciting things that may be coming in the intermodal arena. However, I think opportunities in the information systems area are the future in a technological sense. And I believe we've just started to tap into it. As state-of-the-art as our centralized despatching center is, for example, I suspect that by 1995 or so we'll be planning for the next generation. As you look at it today, it's hard to imagine what on earth could replace it. But I'm sure people thought the same thing when they saw the first ctc board. I know I did. But things move so much faster now. It took decades for the old ctc board to give way, but I'm convinced that our control center will only last four or five years before technological improvements will change it dramatically. I should add, and I know Jerry Davis has told you this, we've looking at technology that will produce improved service quality in the safest possible manner, and that's why we're not leaping into any of the advanced train control system technologies being promoted. We think they're exciting, that they're scratching the right itch, but that they're not there yet.

RA: So, overall, you're putting the railroad back together, but segmenting it on both the sales/marketing and operating sides, in the latter case to get a better handle on the operating ratio.

CARPENTER: You could say that. We know that we are not doing everything right, not yet. We know that in terms of maintenance-of-way spending, by any measure we're doing very well. We have the best derailment record in the industry. But there are also categories where we have some catching-up to do, and one has to do with locomotive performance. We have had a substantial improvement in mean time between failures—up 15 1/2% to 79.8 days from 1989 to 1991—and in other measures relating to reliability, and this is reflected in the kind of service our customers have been receiving. The challenge in all of our considerations of segments of the operating ratio is to make sure we're getting at least the same bang for the buck that our competitors are getting. And then more. ■

Costing commuter services

Caltrain reports the results of a survey that may help narrow the data gap that commuter rail planners confront when they consider new or expanded services.

By GEORGE E. GRAY
Deputy District Director
Planning and Public Transportation
California Department of Transportation

Commuter rail services in North America are currently growing at a healthy pace both in ridership for the older systems and in the number of operations. Interest in this mode of urban travel is continuing to increase, and indications are that a number of new and expanded services will be added to the commuter rail inventory in the 1990s.

In order to study the feasibility of new or added commuter rail services, it is useful to estimate the full range of costs and revenues associated with the proposals. At present, aggregated costs and operating data of the existing services are scarce. The Urban Mass Transportation Administration's (UMTA) report, *Compendium of Urban Mass Transportation Statistics*, is based on reported transit operating statistics as required by Section 15 of the UMTA statutes and provides some basic information, but not enough data to be of much assistance for those interested in identifying opportunities for improving the efficiency of existing commute rail services or analyzing the feasibility for new or expanded services.

The American Public Transit Association's 1990 *Transit Operating and Financial Statistics* is much the same as the UMTA Section 15 report and is not, in the judgment of many, adequate for service feasibility studies.

The research into the operating statistics of existing rail commute services reported herein was initiated to help fill the need for such data. It also served the more immediate need for statistical information on North American commuter rail services in order to provide comparison data relating to the fare structure of the Caltrain regional rail service that operates in California between San Francisco and San Jose. As responsible state manager for this service, the author's basic problem and need for information was this: The Caltrain service, by legislative mandate, is to operate at a minimum revenue recovery ratio of 40% based on an income/cost definition established by legislation that is very restrictive and believed to be more constrained than any other in the industry. For instance, operator incentive payments, advertising, property taxes, and insurance are all charged to operating expense under the definition established in the current California statutes.

With the late 1990 Mideast crisis and its resulting fuel cost fluctuations, the Peninsula Commute Service recovery ratio was calculated at about 32.8%, with contributed local funds used to bring the income up to the required 40% level. Although efforts to attempt to reduce the operating costs continued, it was apparent that until the service is operated directly by those paying the costs, thereby reducing many of the expenses caused by contracting through the Southern Pacific Transportation Co., the opportunities to reduce costs in the short run were few. This was especially true in the face of unstable fuel prices and existing Southern Pacific labor agreements.

The obvious alternative to lowering costs was to raise fares, which had been static since 1982 at about 6 cents per passenger-mile. A fare increase is never welcome, to either management or user, but there was little choice since there were no signs of increased federal or state subsidy.

- **Survey need.** In the late 1970s, the State of California opposed the proposed service abandonment by the Southern Pacific of the San Francisco-San Jose commute service. This ultimately resulted in a contract, beginning July 1, 1980, between the state and the Southern Pacific for continuing the service. This contract provided for a 10-year service continuation with options for contract extension. As the initial 10-year period was drawing to a close, the state informed local governments of its intent to turn the service over to local control. A joint powers authority was formed composed of representatives of the three counties involved (San Francisco, San Mateo, and Santa Clara). This authority began discussions with the Southern Pacific towards purchase of the service and was successful in obtaining legislation to extend

Table 1. SUMMARY OF OPERATING STATISTICS[a] AND COSTS FOR NINE NORTH AMERICAN PROPERTIES[b]

(Representing New York, New Jersey, Toronto, Chicago, Boston, Philadelphia, Washington, D.C./Baltimore, San Francisco/San Jose)

	Range	Average	PCS	BART[c]
Average trip length	13.9-29.4 mi	22.0 mi	23.3 mi	12.6 mi
Operating cost per passenger	$4.07-$8.00	$5.28	$4.37	$2.74
Fare revenue per passenger	$1.48-$3.54	$2.51	$1.48	$1.40
Operating costs per passenger-mile	$0.17-$0.44	$0.26	$0.19	$0.20
Fare revenue per passenger-mile	$0.06-$0.17	$0.12	$0.06	$0.11
Total revenue per passenger-mile	$0.07-$0.19	$0.125	$0.07	$0.12
Passengers per car-mile	1.31-2.60	1.75	2.60	?
Passenger-miles per train-mile	75.5-337.0	191.5	204.6	?
Revenue recovery ratio[d]	38%-62%	50%	38%	55%

[a] Total passengers per year: 272 million.

[b] Properties and year of reported statistics: Long Island RR (F.Y. 1989), New Jersey Transit (F.Y. 1990), GO Transit (F.Y. 1990), Metra RTA Calendar 1989), NICTD (Calendar 1989), MBTA (F.Y. 1990), PCS, (F.Y. 1990), SEPTA (F.Y. 1990), MARC (F.Y. 1990).

[c] BART statistics ('90 F.Y.) are not included in the Range and Average computations.

[d] Total revenue divided by operating cost.

Note: Problems in definition of terms may exist, see text.

Table 2. STATISTICAL SUMMARY OF COMMUTER RAIL SERVICE

	PCS	SEPTA	LIRR	GO Tran.	Metra	MBTA	NJT	MARC
Reporting year	'90 F.Y.	'90 F.Y.	'89 F.Y.	'90 F.Y.	1989	'90 F.Y.	'90 F.Y.	'90 F.Y.
Miles of line(s)	47	282	595	245	424	244	781	151
Trains/workday	52	360	732	145	598	373	569	64
Trains/Saturday	26	248	465	75	269	136	256	0
Trains/Sunday	20	173	471	62	135	68	216	0
Passengers/year(millions)	6.4	25.7	75.4	24.0	67.8	19.2	46.9	3.5
Passenger-miles/year(millions)	149	357	2019	456	1415	348	1020	103
Train-miles/year(millions)	0.73	4.73	7.61	1.35	5.74	2.60	6.68	0.61
Operating cost/year(millions $)	27.8	157.9	603.1	179.1	275.4	88.6	279.8	17.2
Farebox revenue/year(millions $)	9.4	61.1	266.7	86.5	142.8	unknown	143.2	10.1
Total revenue/per(millions $)	10.7	66.3	28j8.2	95.2	163.7	33.3	173.6	10.2
Seat-miles/year(millions)	359	1443	6917	1979	4551	1500	4397	267
Operating cost/passenger ($)	4.37	6.15	8.00	4.09	4.07	4.61	5.96	4.98
Fare revenue/passenger ($)	1.48	2.38	3.54	2.51	2.11	1.74	3.05	2.92
Total revenue/passenger ($)	1.68	2.58	3.82	2.68	2.42	1.74	3.70	2.95
Operating cost/passenger-mile ($)	0.19	0.44	0.30	0.28	0.20	0.25	0.27	0.17
Fare revenue/passenger-mile ($)	0.06	0.17	0.13	0.14	0.10	0.10	0.14	0.10
Total revenue/passenger-mile ($)	0.07	0.19	0.14	0.16	0.12	0.10	0.17	0.10
Passengers/car-mile	2.60	2.07	1.31	1.96	2.30	1.46	1.33	1.34
Passenger-miles/train-mile	204.6	75.5	265.5	337.0	246.5	135.4	152.7	169.0

Note: Problems in definition of terms may exist, see text.

the state responsibility for management of the service until June 30, 1992, giving the authority time to negotiate for the purchase of the rights-of-way.

To provide service continuity, an extension to the original state management contract was consummated in June 1990 providing for a service discontinuance on 90-day notice by either party with such notice to be given no sooner than March 1, 1991. On Jan. 2, 1991, the joint powers authority and the railroad executed a letter of agreement covering the terms and conditions for the purchase of the rights-of-way.

Since the state expects to relinquish the service to the joint powers agency or its successor by no later than June 30, 1992, and has a cost-sharing agreement with them, a decision on any fare increase must include agreement from the transit authorities of the three counties (Muni for San Francisco, Sam Trans for San Mateo County, and the Santa Clara Tran-

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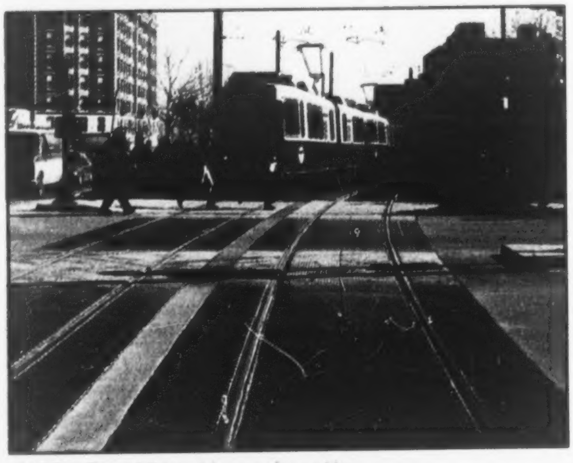

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sit Authority) It was felt that the best marketing strategy for a fare increase would be to present evidence that Caltrain was operating efficiently and that user costs were comparatively low.

To make the case, after consulting existing commuter rail cost data as available and finding it inadequate for the intended purposes, a survey was initiated requesting information from all the readily identified North American commute rail operations.

Seventeen requests for information were sent out in September 1990. The request packet included data and information covering the Caltrain operation, a filled-in form covering Caltrain, and a blank form for the data sought. Several of the 17 requests were known duplications. For example, in the Chicago area, inquiries were sent not only to Metra but also to the RTA and to the railroads providing service for Metra. The goals were to obtain information adequate to use cautiously as (1) a report card for existing services to measure their condition; (2) an indication of the health of particular commute rail services; and (3) an indication of cost and revenue levels that may be expected from such services.

•**Survey results.** Ultimately, results were obtained from all the major commute rail services in the U.S and Canada. The results covered nine major urban areas in North America. Several services were not included in the subsequent statistical analysis either because of their newness or because of their demise during the reporting period, which was generally fiscal year 1990. The resulting statistics are summarized in Table 1. This table also provides specific information on Caltrain (the Peninsula Commute Service, PCS) and, for comparison purposes, the San Francisco Bay Area Rapid Transit (BART) service.

Table 2 presents service information and operating statistics on the eight major services reporting.

In any use of this information, caution is urged, because no attempt has been made to assure that the data is based on uniform definition, and each service should be judged on its particular circumstances. For instance, operating costs cited are as reported by the respective services, yet there is reason to believe that the differentiation between capital and operating costs is not uniform.

The Caltrain service offers a good example of keeping the service characteristics in mind in using such gross data. The Caltrain service does not adequately serve its major market, the central business district of San Francisco. Our "typical" patron drives to the Caltrain depot where he or she pays a modest parking fee, comfortably rides an average 23.4 miles, and catches a Muni bus to a workplace two miles from the Caltrain San Francisco station, so the passenger is paying more than the train fare. Although there is a Peninsula Pass honored by the four major transit systems serving the Peninsula, the added cost for the pass is not reflected in these reported costs, nor are any auto parking charges.

In addition no attempt has been made to group the services to ascertain possible cost differences resulting from such basic factors as source of power, be it electricity or diesel fuel; labor rule requirements; or salary levels for the reporting services. As an example, the labor cost for engineers of the Caltrain service at $25.97 per hour is the highest reported for any

Continued on page 74

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Commuter costing

Continued from page 64

commuter rail service.

•Observations. Although caution is urged in using these results, certain observations can reasonably be made from Table 1.

1. A service range of 14 to 30 miles, as reflected in the average trip length information, can be a valuable indicator of the possible demand service range. This range gives an indication of where marketing may have maximum effect.

2. The operating-cost-per-passenger range of 100% ($4 to $8) is suspected to be largely a function of the differences in power source, labor costs, meld of single trip and commuted fares, and charges for use of track. To obtain expected costs for proposed new systems, a detailed analysis is necessary.

3. Fare revenue per passenger data coupled with the trip length information gives an indication that the present market will accept a fare of about 11.5 cents per passenger-mile. This charge is a bargain for the single occupant auto driver and even for the two-occupant auto if it covers the major portion of the trip cost, since auto costs presently average from 25 cents to 35 cents per mile, including insurance.

4. At present, existing systems are not generating much income from non-passenger sources. This is reflected in the incremental increase shown for total revenue-per-passenger-mile information as compared with fare revenue per passenger-mile. It would appear that there are unaddressed opportunities in this area. For instance, income from rental of non-operating station areas has been a reliable source of revenue for the PCS.

5. The passenger-miles per train mile information is a gross figure that lumps peak and off-peak information together and is not of much value as presented since some of the reported services are more peak-period oriented than others. In the case of the PCS, the weekend and off-peak weekday ridership is growing at a faster rate than the peak-period ridership..

6.The peak vs. off-peak ratio for a particular service also corrupts the reported data for passenger-miles per train-mile. However, this factor is of value for indicating the worth of specific services and balancing train size with demand.

•How data was used. The information presented in Table 1 was used in the process of obtaining approval for changes in Caltrain's fare structure.These changes, effective Sept. 1, 1991, resulted in a modest fare increase averaging about 6%. Note that it took a full year from the date of the initial survey to implement the increase, a year and a half from the initial identification of the need for a fare adjustment. Ridership statistics for the first two months of the new fares indicate the goal of a 6% increase in income was obtained with no patronage decrease.

The data for BART included in Table 1 has been used by some to argue the relative roles of BART and Caltrain types of services. BART has many of the attributes of commute rail service, especially when considering its presently proposed line extensions. However, because of operational restrictions, such as inability to provide skip-stop service, it is less flexible than Caltrain in providing high speed service. The statistics indicate that with equal fare policies, the two services would have comparable operating costs per passenger-mile and a higher farebox recovery ratio for the PCS.

The survey results will be further used as follows:

1. To develop the service under the expected new service provider.

2. To identify possible changes in marketing strategy.

3. To identify possible efficiency and effectiveness improvement opportunities.

The reported data is a beginning to identification of operating costs for providing commuter rail services. Further work is needed, for example, to match costs with: power source (diesel vs. electric);.labor costs (for both operations and management); contract vs. owned services (including Amtrak vs. non-Amtrak contracted services); service levels (especially peak vs. off-peak and weekend services); fare policies (especially commuter and other reduced fares vs. single trip fares).

In addition, there is a need to define operating costs for commuter services in order to uniformly identify what costs should be charged to operations.

Adapted from a paper prepared for the Transportation Research Board. ■

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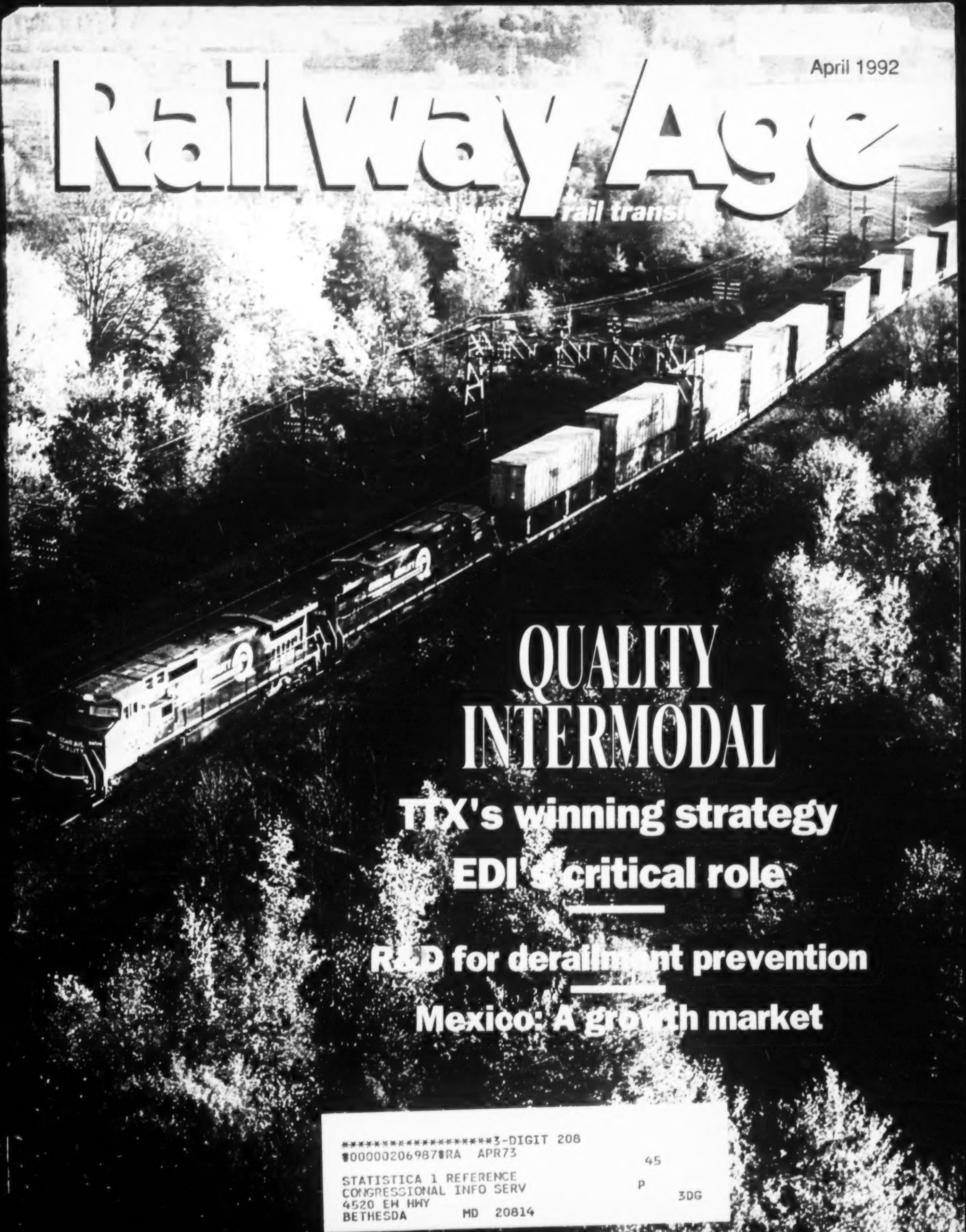

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Railway Age

QUALITY INTERMODAL

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Cover: Photo by Gary Benson

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Market Outlook

Equipment

Bay Area Rapid Transit: Directors voted on March 17 to award a $141.6 million contract to Morrison Knudsen for 80 C-Cars with options for an additional 170 vehicles. Also competing for the contract were C. Itoh/Kinki Sharyo and Mitsui/Kawasaki. MK will establish a facility in the Bay Area to complete the BART order as well as an order received earlier from Caltrans for 88 cars valued at $155 million.

CN North America: Awarded a $40 million (C) contract to GE Locomotives Canada of Montreal for 40 new high horsepower locomotives. CN said that while much of the building and final assembly of the new locomotives will be carried out at GE's Erie, Pa., plant, the contract includes a commitment by GE to fill a number of other orders at its plant in Montreal, including rebuilding 50 locomotives for a US. railroad and building 36 locomotives for export.

CN North America: Awarded a $15 million (C) contract to Toronto-based Lovat Tunnel Equipment to design and build a boring machine for a new, 6,000-foot, $155-million tunnel connecting Sarnia, Ont., and Port Huron, Mich. The machine is to be delivered early in 1993. Excavation for approaches to the new tunnel, 100 feet north of an existing one, will begin this fall with completion scheduled for the fall of 1994.

Facilities

CSX Transportation: Awarded a contract to Motel Sleepers Inc. to provide lodging services to CSXT's Detroit and Florence divisions. This is the third contract MSI has signed with the railroad in the past year and gives MSI about a third of CSXT's lodging business.

Los Angeles Transportation Commission: Awarded an $18 million contract to Mass Electric Construction Co. of Los Angeles for the supply of 20 traction power substations for the Metro Green Line. As a subcontractor, Siemens Transportation Systems of New York will supply equipment valued at $12 million. The substations will use Siemens Programmable Logic Controllers for equipment monitoring and control.

Port Authority Transit (Pittsburgh): Awarded a contract to Thomas K. Dyer Inc. to design changes and oversee contruction of two major switch and signal installations on PAT's light rail system in South Hills. The changes involve double the number of new crossover tracks and automatic switches, and will double the number of sites where PAT can switch trolleys from inbound to outbound.

St. Charles County (Mo.): Has raised $150,000 to help finance a study of an extension into St. Charles County of Metro Link, the light rail system now being built between East St. Louis and Lambert Field.

Revenue Freight Carloadings

Commodity	Mar 21 week	Mar 14 week	Mar 7 week	Feb 29 week	Feb 22 week
Grain	30,730	29,352	30,669	29,845	28,317
Other farm products	1,735	1,704	1,624	1,738	1,517
Metallic Ores	13,873	11,856	13,850	14,303	14,442
Coal	123,008	123,063	119,719	123,534	127,734
Crushed stone, sand and gravel	11,837	11,276	11,301	10,385	10,740
Nonmetallic minerals	8,568	8,201	8,029	7,830	8,424
Grain mill products	10,105	9,941	10,375	10,557	10,227
Food and kindred products	9,081	9,293	9,063	9,462	9,009
Primary forest products	9,443	8,865	9,126	9,122	9,184
Lumber and wood products	6,194	6,137	5,897	6,874	6,073
Pulp, paper and allied products	10,352	10,313	10,428	11,211	10,350
Chemicals	30,272	28,923	29,969	29,380	28.748
Petroleum products	4,901	5,032	4,635	4,867	4,481
Stone, clay and glass products	9,206	8.650	8,808	8,317	8,099
Coke	5,268	5,104	5,227	5,408	5,339
Metals and products	10,479	9,788	10,056	11,078	10,179
Motor vehicles and equipment	19,187	17,877	17,526	18,071	17,625
Waste and scrap materials	8,598	8,498	8,391	8,497	8,149
All other carloads	6,279	6,561	6,353	7,460	5,518
Total cars loaded	**329,116**	**320,434**	**321,046**	**327,939**	**324,155**
% change from previous year	3.4	1.1	0.4	1.2	1.6

		%change
Cumulative total: 12 weeks	3,809,222	1.6

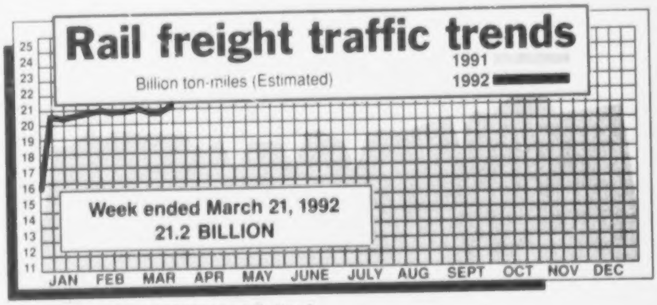
	Mar 21	Mar 14	Mar 7	Feb 29	Feb 22
Estimated revenue ton-miles	21.2	20.7	20.7	21.0	20.8
% change from previous year	6.5	4.0	3.0	4.0	4.0

Total:	**1991**	**1990**	**%change**
weeks	245.2	234.7	4.5

Intermodal Traffic

	Mar 21	Mar 14	Mar 7	Feb 29	Feb 22
Trailers	62,000	61,649	61,950	62,795	58,850
Containers	64,618	63,597	60,417	62,011	62,020
Total	**126,618**	**125,246**	**122,367**	**124,806**	**120,870**
% change from previous year	9.0	7.8	4.4	3.2	3.4

		% change
Cumulative total: 12 weeks	1,458,639	4.9



Source: Association of American Railroads

Seoul Metropolitan Government: Awarded a $33 million contract to Union Switch & Signal International Co., a subsidiary of Union Switch & Signal Inc. of Pittsburgh, to supply signaling equipment for Line 5 of the South Korean capital's subway. US&S will supply 24 interlockings as well as two depots, employing a solid state interlocking system utilizing US&S Microlok and Genysis microprocessor-based products.

May 1992

Railway Age

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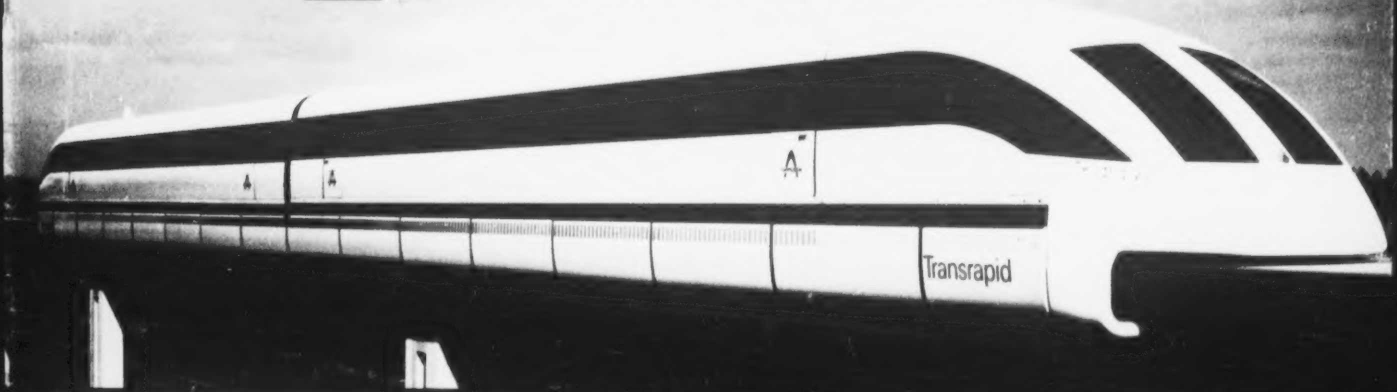

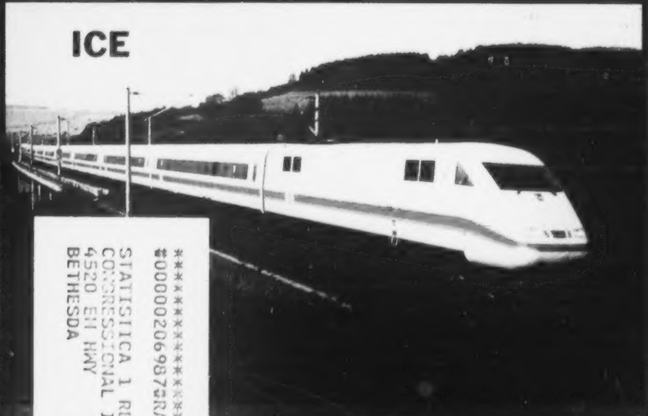

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HIGH SPEED RAIL SPECIAL REPORT BY JOSEPH VRANICH:

"History is in the making"

Managing for profit:

Wisconsin Central

New technologies in rail grinding

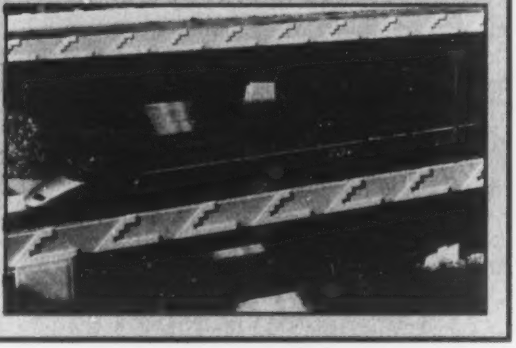
May 1992

Railway Age

HSR SPECIAL REPORT

22 High speed hopes soar

"History is in the making," writes SUPERTRAINS author Joseph Vranich as he reviews a year of extraordinary events that could hasten a revolution in ground transportation. After a detailed examination of progress (and sometimes, lack of it) at home and abroad, he concludes: "We're getting closer to a new Railway Age in North America."



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With rail grinding's benefits clearly established, users are looking toward a new generation of shorter, lighter, computerized machines.

48 Managing for profit: Wisconsin Central

President Ed Burkhardt's rule: "We don't condone anything that stands in the way of maximum productivity and effective customer service."

55 Tank cars as sales tools

When your commodities are much like those of your competitors, transportation becomes a vital sales tool—and Olin Corp. has reacted accordingly.

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Market Outlook

Equipment

Burlington Northern: Placed a $10 million order with Johnstown America for 240 121-ton-capacity aluminum body coal cars for delivery late this year. (Details, p. 14.)

Facilities

Los Angeles County Transportation Commission: Has given Union Switch & Signal authority to proceed on a $57.5 million contract to design, build, and install an automated control system for the Los Angeles Metro Green Line. Award of the contract was announced earlier this year, but it appeared to be in jeopardy after LACTC cancelled a $121.8 million order it had placed with Sumitomo for 41 Green Line cars, announced that it would try to establish a local carbuilding facility, and said it would reconsider automation of the line. (*RA*, Feb., p. 19). But on April 22, LACTC voted unanimously to have US&S proceed immediately to implement the full contract. The system will control the I-105 and El Segundo segments of the Green Line, comprising 19.5 miles, 14 existing passenger stations, and two future stations.

Voest-Alpine Nortrak: Has broken ground for a trackwork manufacturing facility in Birmingham, Ala., that is scheduled to go into production in September. Voest-Alpine Nortrak President Al Tuningley said the 100,000-square-foot facility will produce AREA design trackwork as well as movable point frogs, welded manganese frogs, and asymmetrical switches.

European Bank for Reconstruction and Development: Awarded a $1-million contract to Booz Allen & Hamilton to conduct a study of railways in the former Soviet Republics of Russia, Ukraine, Belarus, and Kazakhstan. Booz Allen, which was selected out of a field of six international consulting firms, said the study "will help define the future role of the railways in an economy undergoing fundamental change, analyze economic and political factors that will affect railway operations, and pinpoint measures needed to transition the railways from their present to future position."

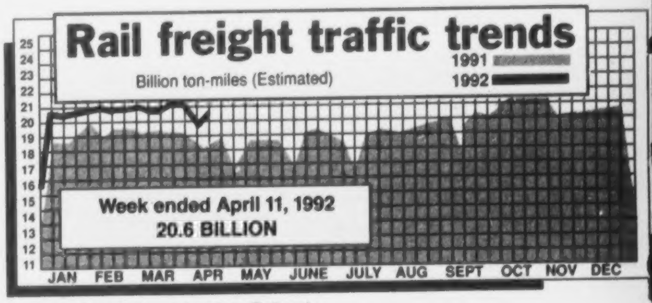
Santa Fe: Installed a new locomotive washing facility at Corwith Yard, Chicago. The washer, built by InterClean Equipment, uses a high-pressure cleaning system, a blower system for removing excess water, a water reclamation system, and a waste water treatment facility that meets all federal EPA and local environmental requirements. The system is housed in a 120-foot-long building with roll-up doors at each end.

Revenue Freight Carloadings

Commodity	Apr 11 week	Apr 4 week	Mar 28 week
Grain	28,477	29,301	29,486
Other farm products	1,667	1,867	1,900
Metallic Ores	17,313	15,898	12,768
Coal	120,065	111,957	124,014
Crushed stone, sand and gravel	13,631	13,024	11,838
Nonmetallic minerals	9,353	9,016	8,505
Grain mill products	10,294	10,377	10,330
Food and kindred products	9,084	9,534	9,021
Primary forest products	9,499	9,470	9,360
Lumber and wood products	5,494	5,718	6,285
Pulp, paper and allied products	10,325	10,798	10,635
Chemicals	30,646	30,662	30,051
Petroleum products	5,318	4,830	5,018
Stone, clay and glass products	9,441	8,941	9,351
Coke	5,347	5,468	5,563
Metals and products	9,462	10,284	10,894
Motor vehicles and equipment	18,959	18,131	19,284
Waste and scrap materials	9,032	8,457	8,255
All other carloads	6,922	6,613	6,390
Total cars loaded	**330,329**	**320,346**	**328,948**
% change from previous year	0.4	0.6	5.6
			%change
Cumulative total: 15 weeks		4,789,713	1.8
Estimated revenue ton-miles	20.6	19.9	21.2
% change from previous year	3.5	2.6	9.3
Total:	1992	1991	%change
15 weeks	306.9	293.5	4.6

Intermodal Traffic

	Apr 11	Apr 4	Mar 28
Trailers	63,374	65,521	63,834
Containers	64,274	62,672	64,826
Total	**127,648**	**128,193**	**128,660**
% change from previous year	11.9	2.6	5.6
			% change
Cumulative total: 15 weeks		1,838,121	11.9



Source: Association of American Railroads

Freight Car Deliveries

	DELIVERED		ORDERED		ON ORDER AND UNDELIVERED	
	1st Quarter 92	1st Quarter 91	1st Quarter 92	1st Quarter 91	1st Quarter 92	1st Quarter 91
Built New by Carbuilders	4,660	6,397	8,421	5,873	12,975	10,683
Rebuilt	188	1,419	737	5,164	1,713	3,745
Total	**4,848**	**7,816**	**9,158**	**11,037**	**14,688**	**14,428**

Locomotives (new & rebuilt): Not available
Source: American Railroad Car Institute

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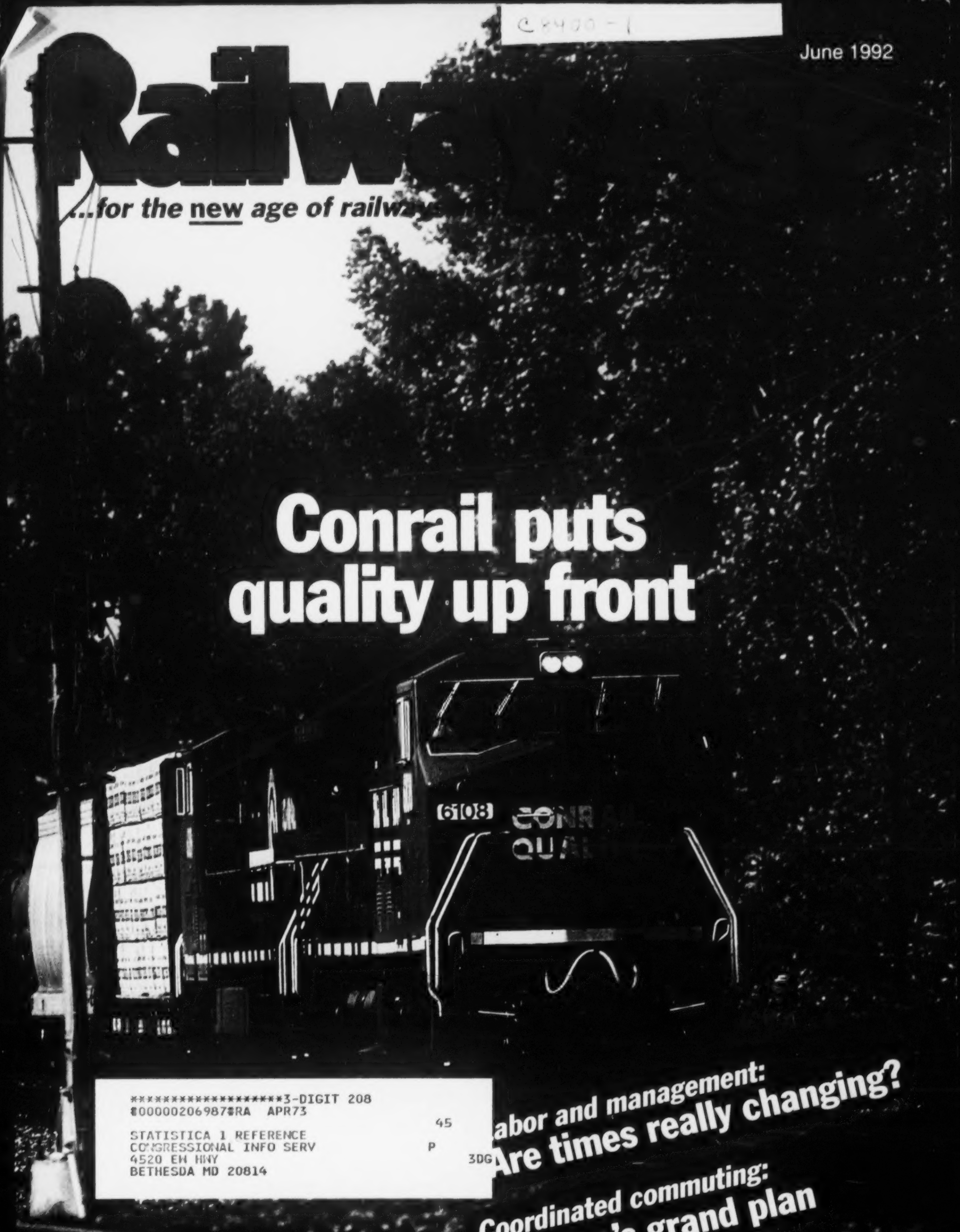
June 1992



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Conrail puts quality up front

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Coordinated commuting: Chicago's grand plan

June 1992

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With neither side yet a clear winner, unions must choose between militancy and moderation, and management must recognize the downside of downsizing.

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FAST, the Chicago region's plan for advanced rail commuting, could be slowed by squabbles over turf and funding.

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When CTA's Loop-Midway Southwest Line opens next spring, it will probably be both on time and under budget.

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Festive events and free rides mark the formal opening of America's newest system.

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Industry Outlook

D&A testing: A negative trend

Federal Railroad Administration numbers show that drug and alcohol testing results showed a reduction in the "positive" rate for the third straight year. FRA reports that in mandatory post-accident testing, 1.5% of employees tested positive in 1991, down from 3.2% in 1990 and 6% in 1988. In reasonable-cause testing, 2% tested positive, down from 2.2% in 1990 and 5.4% in '88. Reports on random testing, based on 50,000 tests, showed a positive rate of 0.9%, down from just over 1% in 1990. Federal Railroad Administrator Gil Carmichael said he found the results "gratifying."

Pittsburg, Calif., picked for MK railcar facility

Morrison Knudsen will spend more than $2 million to convert a former U.S. Steel plant at Contra Costa Industrial Park in Pittsburg, Calif., into a railcar manufacturing facility. Renovation of the plant begins this month and is to be completed in October. MK will use the facility initially to complete two major California orders. In March, the Bay Area Rapid Transit District (BART) awarded MK a $141.6 million contract for 80 new cars, with options that could bring total production to 250 cars.MK also has a $155-million order from the California Department of Transportation (Caltrans) for 88 cars. MK Chairman and CEO William K. Agee said the San Francisco Bay Area site "offers us a key vantage point for serving both domestic and foreign markets."

ECAP forecasts freight car resurgence

The latest ECAP Outlook for Freight Cars forecasts delivery of 26,600 new in 1992, compared with 24,600 delivered in 1991. ECAP expects deliveries to rise gradually over the next four years, exceeding 41,000 by 1995. Factors influencing new car demand include: expected steady increases in rail traffic, and increased car utilization. The following ECAP/ARCI table lists actual 1990-91 deliveries and projections for 1992-96:

CAR TYPE	1990	1991	1992	1993	1994	1995	1996
Box car	0.4	0.2	0.1	0.3	0.5	0.5	0.5
Covered Hopper	6.9	3.0	4.5	6.5	8.0	8.0	7.5
Flat Car	12.8	8.5	8.5	9.0	9.0	9.0	8.2
Articulated	12.2	6.8	6.0	7.0	7.5	7.5	7.0
Other	0.6	1.7	2.5	2.0	1.5	1.5	1.2
Open Hopper	3.8	3.6	3.0	4.5	6.5	7.5	8.0
Gondola	1.5	3.8	4.5	7.5	8.5	8.5	8.0
Tank	6.7	5.5	6.0	7.0	8.0	8.5	8.5
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total new	32.1	24.6	26.6	34.8	40.5	41.5	40.7
Rebuilds	5.7	7.4	5.8	6.0	5.8	5.5	5.5
Grand Total	37.8	32.0	32.4	40.8	46.3	47.0	46.2

Market Outlook

Equipment

Norfolk Southern: Is acquiring a custom-designed DC4170 ContChamp container reach stacker from Kalmar of Sweden. Delivery of the 23-foot wheelbase unit is expected this month. It will permit loaded containers at NS's Lambert's Point, Va., import/export terminal to be stacked four across, four high in the first row and three high in the second.

Burlington Northern: Will acquire a total of 1,000 jumbo-plus covered hopper cars from Trinity Industries. BN had earlier announced it would acquire 500 of the cars (*RA*, April, p. 20) but doubled the order because "after reviewing the long-term business plan, market expectations, and equipment lease prices, BN felt it was important to further reduce its reliance on leased cars," said Harry Baldaccini, equipment team leader for BN's covered hopper car fleet. Each of the cars will have the capacity to move 111 tons of grain.

Morrison Knudsen: Received orders totaling $35 million for the remanufacture or repair of 62 passenger and freight locomotives, all of the work to be performed at its Boise, Idaho, shop. In addition to a contract from New Jersey Transit for the rebuilding of six commuter locomotives, MK said it had won orders from three Class I railroads for rebuilding or repairing 56 freight units.

Facilities

Bombardier: Completed purchase of the Mexican carbuilder, Concarril, through a newly created Mexican subsidiary, Bombardier S.A. de C.V., which will be part of Bombardier's Transportation Equipment Group-North America. Concarril's operations were suspended last December to facilitate privatization. The order backlog includes 23 light rail vehicles for Monterrey, 32 light rail vehicles for Guadalajara, 100 freight cars for Mexican National Railways, and 100 freight cars for a U.S. railway, the Santa Fe.

DART: Issued notice to proceed to construction contractors on two projects: Hensel Phelps, on the one-mile, $19 million, Trinity River Light Rail Bridge; and S.A. Healy, on the 3.5 mile, $87 million Light Rail Tunnel between Mockingbird Lane and downtown Dallas. Both firms had begun preliminary site work by the end of April.

Revenue Freight Carloadings

Commodity	May 9 week	May 2 week	Apr 25 week	Apr 18 week
Grain	20,943	23,329	23,984	24,582
Other farm products	2,187	1,913	1,659	1,590
Metallic Ores	19,563	18,814	16,262	18,225
Coal	121,680	121,331	120,634	118,191
Crushed stone, sand and gravel	14,402	14,628	14,759	13,041
Nonmetallic minerals	9,047	8,683	9,426	8,538
Grain mill products	9,880	9,911	9,830	9,533
Food and kindred products	9,351	9,288	9,054	8,576
Primary forest products	8,828	9,043	9,100	9,278
Lumber and wood products	5,603	6,362	6,063	5,935
Pulp, paper and allied products	10,007	10,702	10,564	10,054
Chemicals	30,587	30,781	31,438	29,102
Petroleum products	5,530	5,292	5,481	5,045
Stone, clay and glass products	10,122	9,927	9,326	9,401
Coke	5,632	5,245	5,317	5,489
Metals and products	10,397	10,666	10,238	10,238
Motor vehicles and equipment	19,505	19,286	16,298	16,162
Waste and scrap materials	9,130	9,284	8,753	8,587
All other carloads	7,320	7,615	6,952	6,211
Total cars loaded	**329,714**	**332,100**	**325,138**	**317,778**
% change from previous year	4.0%	2.7%	0.4%	11.5%

		%change
Cumulative total: 19 weeks	**6,094,013**	**2.3**

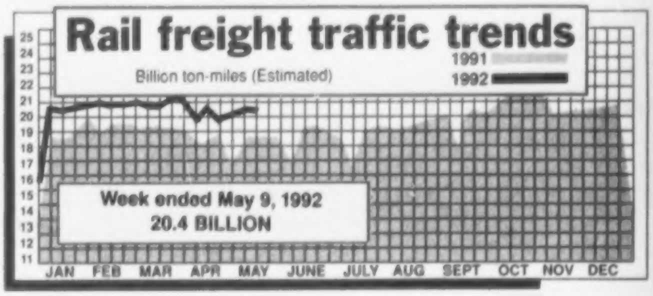
	May 9	May 2	Apr 25	Apr 18
Estimated revenue ton-miles	**20.4**	**20.5**	**20.2**	**19.7**
% change from previous year	6.3	4.1	3.1	13.9

Total:	**1992**	**1991**	**%change**
19 weeks	387.6	369.2	5.0

Intermodal Traffic

	May 9	May 2	Apr 25	Apr 18
Trailers	61,667	65,219	59,379	58,200
Containers	66,089	64,986	62,522	62,322
Total	**127,756**	**130,205**	**121,901**	**120,522**
%change from previous year	9.8	12.2	8.8	32.1

		%change
Cumulative total: 19 weeks	2,338,822	8.3



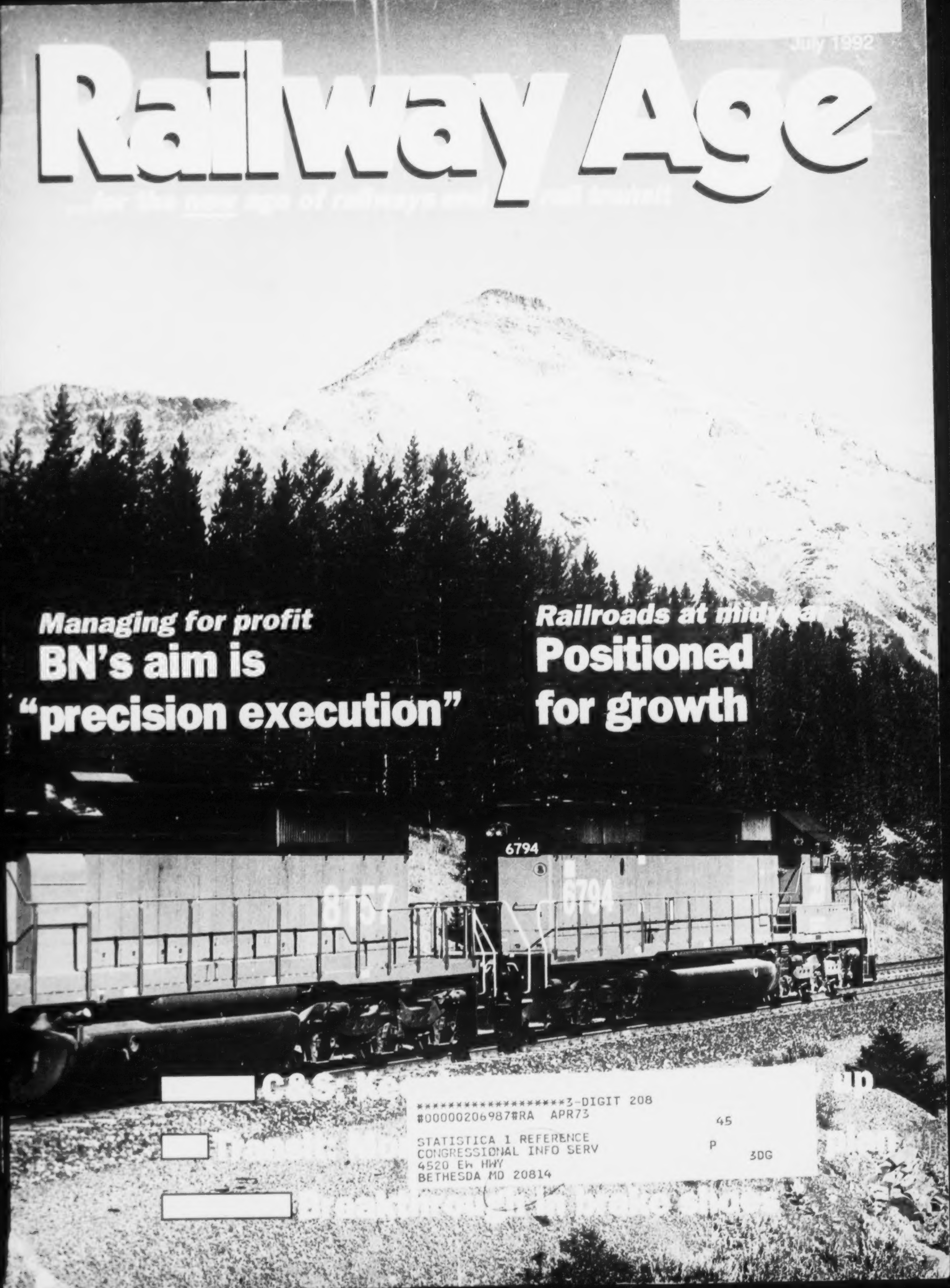
Source: Association of American Railroads

Union Switch & Signal: Received a $12.9 million signaling contract for Chicago's Union Station. US&S will provide vital logic to control and signal three interlockings, as well as signaling throughout the Chicago Union Station area. Testing and implementation of the equipment will be phased in over a 30-month period. US&S President Walter Alessandrini also announced that the company had received a contract to remanufacture 120 of its A-5 Model electro-pneumatic switch machines for Union Station. The machines have all been in service for more than 20 years. US&S says remanufacturing will save at least one-half the cost of a new unit. The remanufactured units will carry US&S's full, one-year new product warranty. Funding for the remanufacture project will come from the Chicago Union Station Co., Metra, and the Federal Transit Administration.

July 1992

Railway Age

—for the new age of railways and rail transit



Managing for profit

BN's aim is "precision execution"

Railroads at midyear

Positioned for growth

C&S: Ke ... nd

Transit ...

... breakthrough in brake shoes

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July 1992

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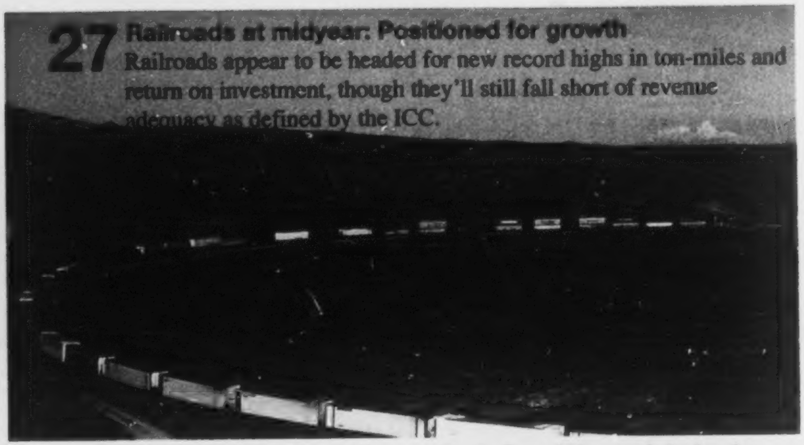

27 Railroads at midyear: Positioned for growth

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31 Managing for profit: BN's aim is "precision execution"

Chairman and CEO Gerald Grinstein says the goal is "tailoring service to meet a customer's need, in an economical way."

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41 Breakthrough in brake shoes

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45 From three losers, a winner

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Environmental-related traffic will help as this Arizona short line tries to grow local traffic in desert country.

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What CP Rail is proposing is a public/private partnership to extend the commuter rail system from two routes to as many as 10.

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Market Outlook

Equipment

CSX Intermodal: Will acquire 675 new 48-foot trailers in an expansion of its equipment ordering system. "Intermodal customers are increasingly demonstrating a preference for 48-foot equipment," said Doug Christy, director-product management. "The new ordering system and equipment fleet upgrading work together to significantly increase the complete service package that we offer." He said orders will be required for all 48-foot trailers that are picked up empty from a CSXI terminal, a procedure similar to the ordering system that has been in effect for domestic container and temperature-controlled equipment.

Facilities

Federal Transit Administration: Awarded an $8.9 million grant to the Transportation Research Board (TRB) to launch a public-private initiative addressing short-term research needs of the transit industry. DOT Secretary Andrew H. Card said the Transit Cooperative Research Program "reflects the administration's determination to stimulate progress in the transit industry while reducing federal red tape." He noted that the grant is the first award of $88 million authorized over the next six years by the Intermodal Surface Transportation Efficiency Act.

Port Authority of New York and New Jersey: Authorized the expenditure of $7.8 million for advanced engineering and design work on NJ Transit's planned Secaucus Rail Transfer Station.

Metro-North: Will invest $35 million in a new car maintenance shop and an expanded storage yard at Stamford, Conn. The Federal Transit Administration has granted $28 million for the project; the state of Connecticut will provide $7 million. The new shop will maintain and perform repairs on a fleet of 344 electric commuter rail cars. The first floor of the three-story structure will consist of a shop accommodating six cars inside, an air conditioner and communication repair shop, and a material storeroom. The second and third floors will have administrative offices and welfare areas for Metro-North and ConnDOT personnel. The expanded storage yard will be able to accommodate up to 125 cars.

San Francisco Municipal Railway: Awarded a contract to the SEL Division of Alcatel Canada for the supply of an advanced train control system. The base bid was for $21.5 million, with options not to exceed $52.7 million.

Bethlehem Steel: Has entered into negotiations for the sale of its Steelton, Pa., trackwork fabrication operations, including the steel foundry and frog and switch departments, to Conley Frog & Switch. If the sale is consummated, Conley plans to continue operating the trackwork facilities at Steelton.

Southern California: The San Diego Association of Governments, the North County Transit District, and the Metropolitan Transit Development Board announced on June 18 the $90.5 million purchase of 82 miles of Santa Fe right-of-way, including the coastal line that extends south from Oceanside into downtown San Diego and the branch line that runs east from Oceanside to Escondido. Double-deck commuter trains are scheduled to begin operating on the line in the fall of 1994. The line purchase is part of a $500 million package put together by a consortium of local governments and transit agencies to buy more than 500 miles of right-of way throughout the area, about $1.4 million a mile.

Revenue Freight Carloadings

Commodity	June 13 week	June 6 week	May 30 week	May 23 week
Grain	25,132	22,626	18,508	21,006
Other farm products	2,261	2,439	1,974	2,259
Metallic Ores	17,581	18,498	19,523	19,536
Coal	128,116	124,090	112,094	124,782
Crushed stone, sand and gravel	15,023	14,778	11,964	14,802
Nonmetallic minerals	9,941	9,731	8,748	9,607
Grain mill products	10,347	10,088	9,148	9,743
Food and kindred products	9,428	9,411	7,962	9,277
Primary forest products	9,061	9,269	8,399	9,718
Lumber and wood products	5,832	5,409	5,603	6,255
Pulp, paper and allied products	10,736	10,575	11,142	10,719
Chemicals	29,238	28,375	27,093	29,911
Petroleum products	5,580	5,696	5,041	5,819
Stone, clay and glass products	9,859	9,999	8,985	10,228
Coke	5,538	5,542	6,689	5,917
Metals and products	8,899	9,295	9,153	9,431
Motor vehicles and equipment	20,611	19,883	16,606	20,419
Waste and scrap materials	9,231	8,839	8,183	9,118
All other carloads	7,738	7,425	6,172	7,456
Total cars loaded	**340,422**	**331,965**	**302,987**	**336,003**
% change from previous year	1.5	1.2	6.5	2.1

		%change
Cumulative total: 24 weeks	**7,744,496**	2.5

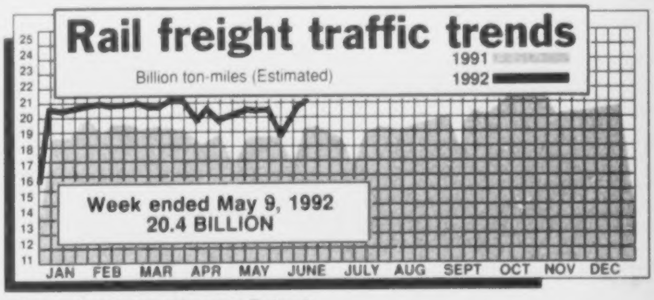
Estimated revenue ton-miles	**21.1**	**20.6**	**18.7**	**20.8**
% change from previous year	3.4	12.5	8.1	4.0

Total:	**1992**	**1991**	**%change**
	488.5	**466.2**	**4.8**

Intermodal Traffic

	June 13	June 6	May 30	May 23
Trailers	64,472	67,070	56,614	66,159
Containers	63,964	65,170	56,636	63,393
Total	**128,436**	**132,240**	**113,250**	**129,552**
%change from previous year	5.9	12.5	10.1	12.0

		%change
Cumulative total: 24 weeks	2,976,936	8.9



Source: Association of American Railroads

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Watching Washington

Under financial scrutiny, Amtrak comes out clean

How is Amtrak spending its taxpayer dollars? Three members of Congress recently asked the General Accounting Office for an accounting. Last month, GAO made public a 23-page "fact sheet" covering everything from the cost of train operations and equipment maintenance to travel allowances for Amtrak staff.

What the inquiring members of Congress hoped GAO would find is not clear. GAO issued its report with the disclaimer that it did not address "the appropriateness of any of Amtrak's expenditures." But an examination of the "fact sheet" shows that Amtrak, far from being a profligate spender, has been watching and controlling its costs carefully—not surprising to anyone familiar with the lean management style of Amtrak President W. Graham Claytor, Jr.

As for the big picture, GAO noted: "In recent years Amtrak's requirement of federal operating subsidies has decreased. In fiscal year 1980, Amtrak covered 48% of its operating expenses through revenues and required a $650.4 million operating subsidy. In fiscal year 1991, Amtrak covered nearly 79% of its expenses with revenues and required a $343.1 million operating subsidy."

The Congressional inquirers specifically requested information for fiscal years 1988-1991. Reported GAO: "Amtrak's operating revenues increased by 22.8% between fiscal years 1988 and 1991, while expenses increased by 18.4% during the same period."

Wherever expenses might seem somewhat out of line, there was a good explanation. For example, air travel expenses for the office of the vice president for passenger services increased from about $55,000 in fiscal 1988 to over $124,000 in fiscal year 1989—but this included "the cost of returning onboard service personnel to their home bases when service was disrupted because of such problems as floods and mud slides." Travel-related expenses of the office of vice president, engineering, increased from $8,572 in 1989 to $113,131 in 1990—because in the latter year 12 members of a "Management Associates" program in that office traveled throughout the system to learn the operations of the mechanical/engineering department.

The bottom line of GAO's inquiry: Amtrak continues to be perhaps the leanest, most efficient program supported (in part) by taxpayer dollars—certainly, one of the few, if not the only one, that requires fewer and fewer of those taxpayer dollars as it grows.

Amtrak's Revenue, Expenses, and Federal Subsidies, Fiscal Years
(dollars in thousands)

	1988	**1989**	**1990**	**1991**
Revenues	$1,106,727	$1,269,070	$1,308,425	$1,358,950
Expenses				
Train operations	374,845	400,959	417,454	449,585
Maintenance and equipment	384,049	429,038	470,176	443,481
Maintenance of way	193,404	226,789	202,894	204,511
Onboard services	149,921	165,598	173,303	169,733
Stations	109,929	115,749	123,488	125,464
Marketing and reservations	149,670	172,879	176,708	184,457
General support	136,501	135,655	150,284	147,293
Taxes and insurance	61,564	76,497	60,805	63,368
Depreciation and amortization	153,731	165,802	181,619	202,643
General and administrative	41,173	42,061	45,526	49,531
Special charges				27,165
Interest	2,296	3,507	9,583	13,307
Total	**$1,757,083**	**$1,934,543**	**$2,011,840**	**$2,080,538**
Net loss	(650,356)	(665,473)	(703,415)	(721,588)
Federal operating subsidies	532,300	$ 553,800	$ 520,100	$ 343,100

Amtrak's fiscal year runs from October to September.
The federal subsidy is substantially less than the net loss because certain noncash expenses (e.g., depreciation) and other expenses are not covered by federal subsidies.
Source: Amtrak's 1989 and 1991 annual reports.

Railway Age

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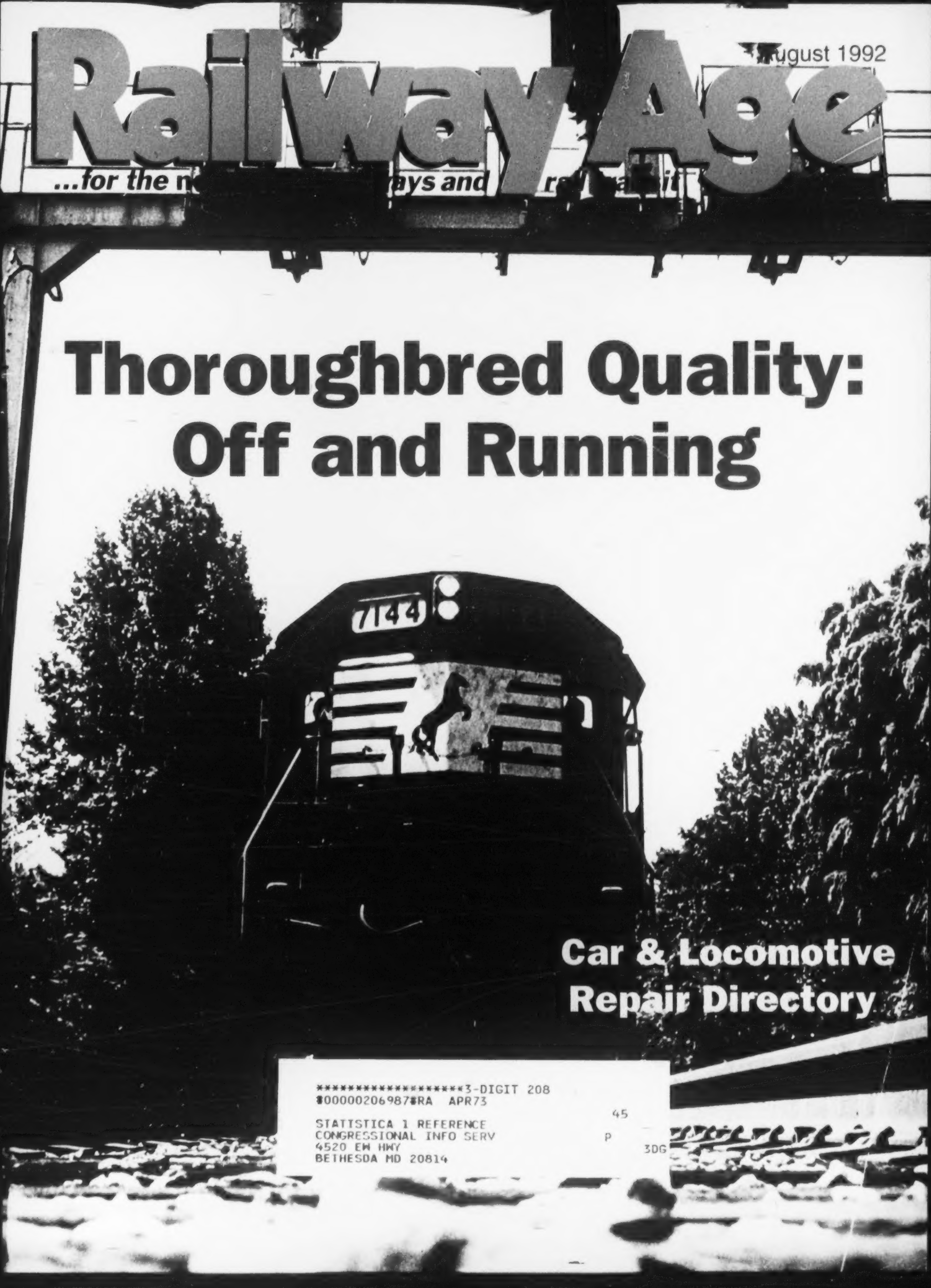

Thoroughbred Quality: Off and Running

Car & Locomotive Repair Directory

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83 Thoroughbred Quality: Off and running

Norfolk Southern's goal is to become "the safest, most customer-focused and successful transportation company in the world."

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89 Amtrak and USPS: Will RoadRailer deliver?

A modified version of the Mark V system is being tested for moving mail in passenger trains. Results so far are promising.

91 AEI: One mystery, no panic

As Amtech works to solve the problem of no-read tags, caused by radar emissions, orders for tags and readers continue to pour in.

94 Twin Cities LRT: A new start

A proposed "super turnkey" regional system was rejected as too costly, but support is growing for a scaled down starter line.

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Market Outlook

Equipment

Conrail: Will acquire 225 new diesel-electric locomotives over a three-year period beginning in 1993. The Electro-Motive Division of General Motors will supply 105 3,800-hp SD 60M units. General Electric will supply 70 4,000-hp C-40-8W units. Funds have been approved but orders have not been placed for the remaining 50 locomotives. Conrail said the new locomotives will be 25% more fuel efficient than those they will replace.

Bombardier Eurorail: Will handle about 16% of the work on the PBKA TGV high speed trains that will link Paris, Brussels, Cologne, and Amsterdam. Bombardier Eurorail will be responsible for the finishing of six of the eight cars in each of the 27 trainsets ordered from GEC Alsthom, as part of its involvement in the international consortium which will carry out the project. GEC Alsthom and Bombardier are also partners in the Canadian TGV project proposed for the Quebec City-Windsor corridor, and have been chosen to supply rolling stock for the Texas TGV project.

Montreal Urban Community Transit Corp.: Signed a $99 million (C) contract with Bombardier for the supply of 29 power cars and 29 trailer cars for the Montreal Deux Montagnes commuter line. Bombardier President and Chief Operating Officer Raymond Royer said the equipment will incorporate stainless steel carbodies, trucks with welded steel frames, and asynchronous traction motors. Deliveries will take place between September 1994 and September 1995.

City Public Service of San Antonio: Is acquiring 250 aluminum-bodied double tub, 120-ton-capacity coal cars from Thrall Car. Production of the first 125 cars was under way last month at Thrall Car's Chicago Heights, Ill., facility, which is also building 375 cars for Wisconsin Electric Power.

Facilities

Meridian Minerals Co.: Plans to build a 33.3 mile rail spur near Billings, Mont., connecting its new Bull Mountains Mine No. 1 with the Burlington Northern. HDR Engineering has prepared the preliminary design.

Italian State Railway (FS): Awarded a $5.4 million contract to Union Switch & Signal to supply equipment for the new 32-track Cervignano classification yard between Venice and Trieste, and also to assist in the design and engineering of the yard. Construction is to begin this fall. US&S will outfit the yard with dual tangent retarder systems designed to maintain the slower speeds required in European yards.

Revenue Freight Carloadings

Commodity	July 18 week	July 11 week	July 4 week	June 27 week
Grain	26.392	26.413	24.024	20,830
Other farm products	1.713	1.964	1.970	1.712
Metallic Ores	11.169	21.063	20.680	18.404
Coal	109.980	108.619	110.112	89.138
Crushed stone, sand and gravel	13.990	14.610	13.083	11,866
Nonmetallic minerals	10.087	9.152	7.904	6,256
Grain mill products	9.543	9.735	8.982	8.544
Food and kindred products	8.670	8.639	7.927	6,633
Primary forest products	7,873	8.898	8.087	7,940
Lumber and wood products	5.192	5.254	5.322	5.244
Pulp, paper and allied products	9.097	10.919	10.277	9.446
Chemicals	25.929	28.175	24.771	23.244
Petroleum products	5.681	6.124	5.354	4.908
Stone, clay and glass products	9.257	9.722	8.783	8,188
Coke	5.583	5.953	5.455	5.478
Metals and products	7,796	8.229	8.840	6.963
Motor vehicles and equipment	14.566	12.685	13.685	14,146
Waste and scrap materials	8.331	8.008	7.319	6.775
All other carloads	6.949	7.026	6.700	5.511
Total cars loaded	**297,798**	**311,188**	**299,275**	**261,226**
% change from previous year	-1.7	-0.5	15.9	-17.7

			%change
Cumulative total: 29 weeks	8,634,856		1.7

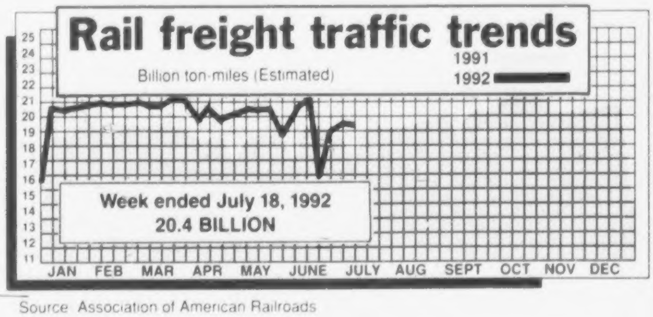
	July 18	July 11	July 4	June 27
Estimated revenue ton-miles	**20.4**	**19.6**	**19.0**	**15.8**
% change from previous year	0.0	-0.5	18.0	-18.1

Total:	**1992**	**1991**	**%change**
	584.8	**562.1**	**4.0**

Intermodal Traffic

	July 18	July 11	July 4	June 27
Trailers	62.620	58.469	61.131	47.492
Containers	66.892	61.521	59.099	51.433
Total	**129,512**	**119,90**	**120,130**	**98,925**
%change from previous year	7.5	4.1	21.7	-21.6

		%change
Cumulative total: 29 weeks	3.578.568	7.9



Source: Association of American Railroads

Polish State Railways (PKP): Awarded a $400,000, five-month contract to New York-based Mercer Management Consulting to develop a new operating strategy to help the 25,000-km PKP, Europe's second largest railway, reduce or eliminate the subsidies it receives from the Polish Government. The contract is funded through a grant to PKP from the U.S. Trade and Development Program, an arm of the U.S. State Department. Mercer was one of 14 international management consulting firms that supplied qualifications to PKP for the project

Shanghai Metro: Awarded a contract to Parsons De-Leuw, Inc. to provide construction management for the first line of the new Shanghai Metro Main Stage. The main line is 14.5 kilometers long and includes 12 stations, of which 11 will be underground.

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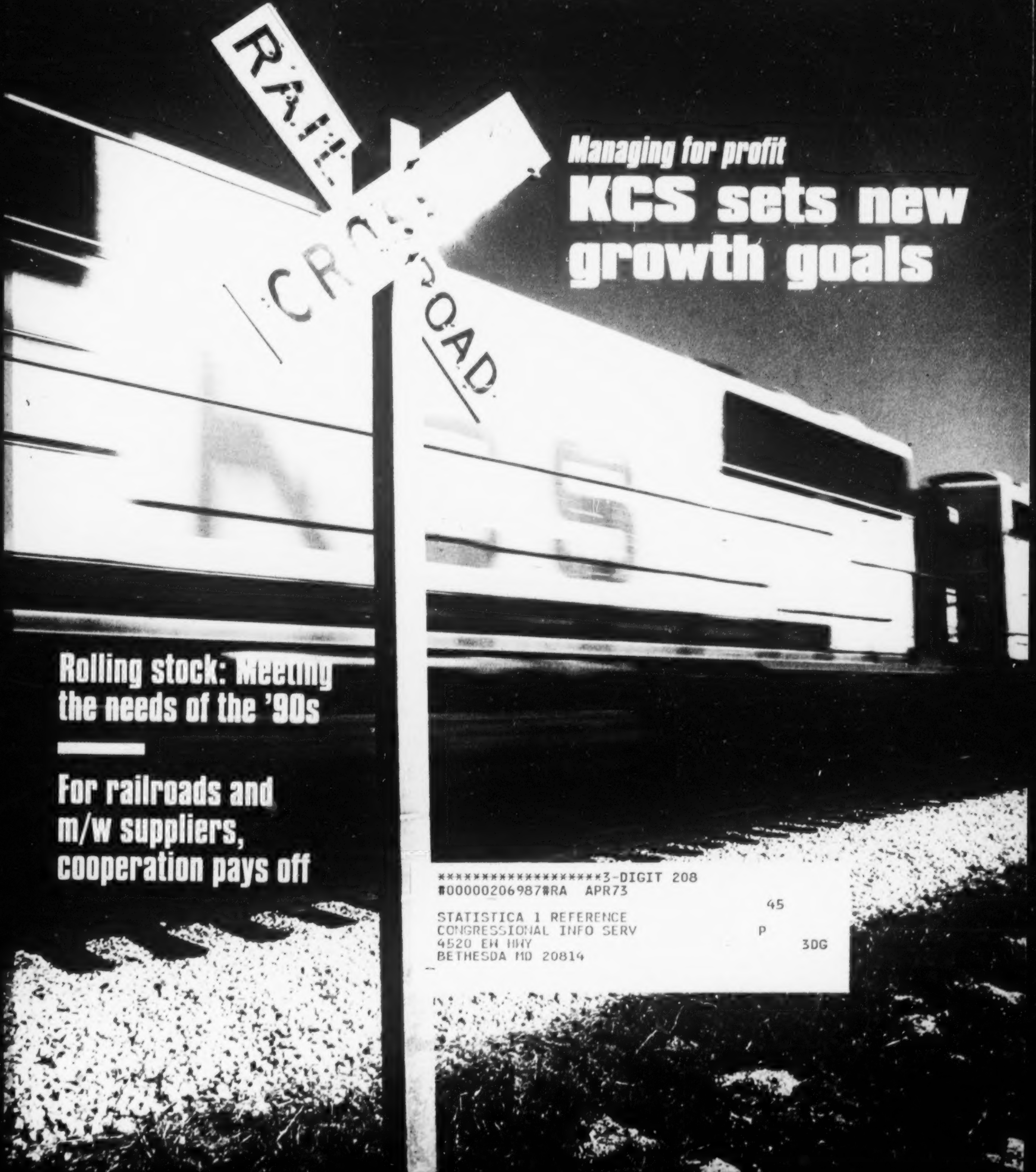

Managing for profit

KCS sets new growth goals

Rolling stock: Meeting the needs of the '90s

For railroads and m/w suppliers, cooperation pays off

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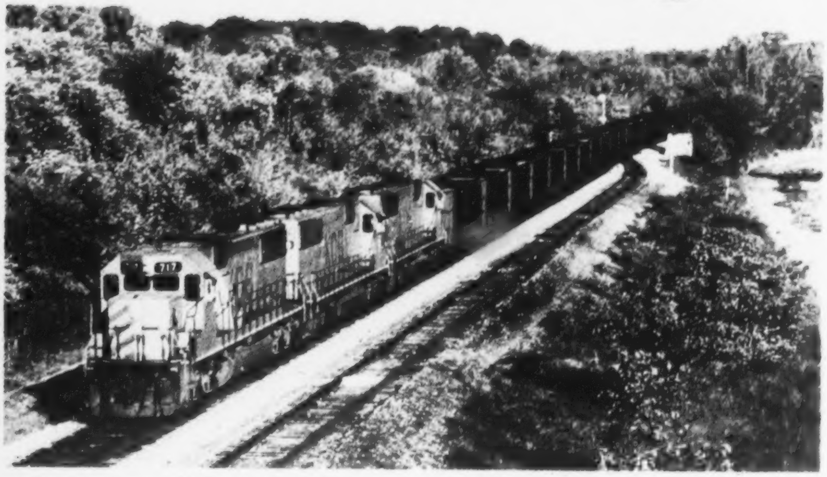

37 Kansas City Southern sets new growth goals
KCS is relying on first-class service, a physical plant in top condition, and an aggressive industrial development program to achieve earnings growth of 10% a year.

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Market Outlook

Equipment

Conrail: Ordered 138 CoilSHIELD cars from Thrall Car. This is the first production order for the coil steel car which was jointly developed by Thrall Car, Conrail, and Inland Steel Flat Products. The car has five wood-lined transverse troughs for greater coil protection; an insulated, one-piece hood to reduce condensation and promote easier loading and unloading; and premium trucks.

British Rail: Ordered eight Stoneblower track machines from Pandrol Jackson at a cost of $18 million. The machines will be built at Ludington, Mich., and are to be delivered between September 1994 and the spring of 1997.

CN North America: Q-Tron Ltd. of Calgary, Alta., will produce electronic equipment valued at $328,000 for 25 new Dash-8 wide-cab locomotives which General Electric is building for CN. The equipment includes an event recording system, a speed control system, and an alertness safety system. GE is producing the $40 million CN order at a Montreal plant which it acquired from Bombardier in 1990. In conjunction with this order, GE's Montreal plant is also rebuilding 40 locomotives for a U.S. road and will produce 42 new units for export. GE has also produced locomotives in Montreal for Mexico, the Philippines, and Mozambique.

Chinese Ministry of Railways: Awarded four contracts totaling $3.46 million to ENSCO of Springfield, Va., for the supply of two track inspection cars and a variety of research equipment over the next year.

Norfolk Southern: Is converting 2,000 coal hopper cars to gondolas. The work is being done at the Roanoke Shops and is to be completed in March 1993. The converted cars will serve facilities, including utilities and the Lamberts Point coal pier, that employ rotary dumping. Prior to the gondola rebody program, 9,500 cars were rebodied as conventional hoppers. NS has also purchased more than 3,000 new aluminum and steel cars since 1989.

Facilities

Amtrak: Placed an order with Bethlehem Steel for four high speed interlockings to be installed at Attleboro, Mass., Davisville, R.I., Branford, Conn., and Guilford, Conn., in connection with the Northeast High Speed Rail Improvement Project. Installation is to be completed by July 1993.

National Rail Corporation of Australia: Awarded a contract to CANAC International of Montreal and BHP Engineering, a division of BHP Australia, to develop a master plan for an intermodal network.

Revenue Freight Carloadings

Commodity	August 15 week	August 8 week	August 1 week	July 25 week
Grain	25,333	25,221	25,543	26,531
Other farm products	1,038	1,015	1,078	1,428
Metallic Ores	19,344	18,577	17,387	17,720
Coal	129,114	124,917	121,209	123,558
Crushed stone, sand and gravel	16,404	15,526	16,526	14,708
Nonmetallic minerals	9,240	9,212	8,276	7,377
Grain mill products	10,210	10,554	9,760	9,603
Food and kindred products	9,358	9,354	9,139	9,439
Primary forest products	8,968	9,175	9,623	9,517
Lumber and wood products	5,564	5,345	6,271	5,699
Pulp, paper and allied products	10,490	10,346	10,782	10,820
Chemicals	28,169	27,383	28,260	27,727
Petroleum products	6,009	6,317	5,799	6,037
Stone, clay and glass products	9,913	9,933	9,615	9,864
Coke	5,895	5,799	5,531	5,680
Metals and products	9,436	8,783	10,093	9,446
Motor vehicles and equipment	16,288	13,440	11,110	12,080
Waste and scrap materials	8,838	8,265	8,504	8,265
All other carloads	6,896	7,033	7,769	7,401
Total cars loaded	**336,507**	**326,195**	**322,275**	**322,900**
% change from previous year	0.1	3.1	0.5	2.0

		%change
Cumulative total: 33 weeks	**10,593,083**	1.5

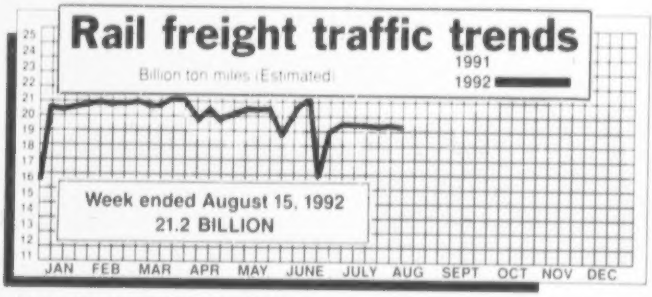
	August 15	August 8	August 1	July 25
Estimated revenue ton-miles	**21.2**	**20.5**	**20.3**	**20.4**
% change from previous year	1.4	1.9	0.5	0.5

Total:	1992	1991	%change
	667.3	644.7	3.5

Intermodal Traffic

	August 15	August 8	August 1	July 25
Trailers	64,916	65,529	66,049	53,610
Containers	68,525	66,449	38,107	68,763
Total	**133,441**	**131,978**	**134,156**	**132,373**
%change from previous year	6.0	7.9	6.6	5.4

		%change
Cumulative total: 33 weeks	4,110,394	7.7



Source: Association of American Railroads

Freight Car and Locomotive Deliveries	Delivered		Ordered		On Order and Undelivered	
	2nd Quarter 1992	2nd Quarter 1991	2nd Quarter 1992	2nd Quarter 1991	As of July 1 1992	As of July 1 1991
Freight Cars						
Built new by carbuilders	5,962	6,003	8,354	5,126	15,367	9,806
Built new in RR shops	0	0	0	0	0	0
Built new-total	5,962	6,003	8,354	5,126	15,367	9,806
Rebuilt (Class I only)	688	3,750	352	2,120	1,369	2,120
TOTAL	**6,650**	**6,753**	**8,706**	**7,246**	**16,736**	**11,926**
Locomotives (new & rebuilt)	74	111	—	—	100	66

Sources: Association of American Railroads and American Railway Car Institute

Lines on Labor

"Beware of those who sow fear instead of reason"

Gus Welty

Following two work stoppages and two Congressional interventions in two years, it is time to take a thorough look at the requirements, procedures, and processes of collective bargaining under the Railway Labor Act. So let's pay attention to one of the most eloquent and most reasoned discussions of the subject that has come along. It was presented by Patrick J. Cleary, member (and immediate past chairman) of the National Mediation Board at the 15th Annual Cooperstown Conference.

When the Act was passed in 1926, he pointed out, railroads were perhaps the nation's largest civilian employer, virtually the only player in intercity transportation, and a highly-regulated industry. Today, all that is changed. Employment has been drastically reduced, intercity transportation competition is fierce, and the industry has been largely deregulated.

In the face of this different scene, Pat Cleary asked, what do we do? He sees two options:

"First, we could do nothing. It's the easiest course. It's the course that has brought us to where we are today. Every two or three years we can have another showdown, another chess game, another strike, or lockout, or whatever you please. Every two or three years, Congress and the parties and the public—-you remember the public—-will complain that the system doesn't work, and in my opinion they'll be right. However, every two or three years we can count on the fact that Congressional attention spans are short, and we can return to our respective bunkers and brace ourselves for the next fray.

"In the meantime, we won't have to come to grips with forging a relationship with our workers. We won't have to get creative about solving our labor-management problems as other industries have, because our fate will ultimately not be in our own hands. Better to work on our relationship with Congress instead.

"There is a second option, and it's one we've not yet tried. It involves action, and it involves leadership. . . .

"The second option would be to finally take a step back—between wars, while the noise level is relatively low—-and re-examine our purpose."

How might this happen? Cleary proposes creation of a panel with representatives from the Administration, from rail and airline labor and management, and from the academic community (people with experience inside and outside the two industries). He would add Congressional representation. The group "should be chaired by an academic above reproach."

Then, Pat Cleary said, a number of fundamental questions should be considered:

—Should railroads and airlines still be segregated from the rest of American industry in their treatment under current labor law? "I've said to a number of folks, 'Let's go stand in an intermodal yard and discuss the logic of the Act.' Maybe there is logic to it, maybe there's not, but this question needs to be re-examined. Do we as a society still want to place a heavy premium on the prevention of disruptions to commerce? Should the changes in these industries since 1926 require a change in the way we treat their labor relations?"

—If railroads and airlines still deserve separate treatment, should they both be treated the same? "There are vast differences in the operations of these two modes of transportation. Is there still logic to having an increasingly global airline industry under the same statute as the increasingly intermodal railroad industry, while trucking, shipping and transit are treated differently?"

—Should there be a right to strike? "There's been much hand-wringing over this topic, and the policy-makers need to come to agreement on it. If there is, de facto, no right to strike, then we should call a spade a spade and craft a system which takes this into account. If, on the other hand, all interested parties come to the judgment that the right to strike is real and should be preserved, then a different result would be commanded, in my view."

—Should there continue to be a right to secondary activity? "In my opinion, this question goes hand-in-hand with the right to strike, but if the parties decide there's no linkage, so be it. Remember, the Act talks in terms of 'threat' of shutdowns. If there are threats of secondary activity, it instantly creates a national situation. Everyone seems to believe that it's a silver bullet, to be used once and never again. If that's the case, then the parties who would use it and the parties who would be on the receiving end of it ought to sit down and discuss whether having it around is more trouble than it's worth. Without it, unions may have freer use of the strike, but at least some of them might remain more local in nature. Again, if the consensus of the group was that there should be no right to strike, then the issue of secondary activity is moot."

—What has been the effect of the Act on the competitiveness of these two industries? "This is a thorny issue which has been whispered about for decades, one that needs to be brought out in the open. Some carriers would say that the Act has forced them over the years to accept 'inefficiencies,'

CLASS I RAILROAD EMPLOYMENT

		% of change from:	
	June 1992	**June 1991**	**May 1992**
Executives, officials, and staff assistants	11,239	3.40	1.33
Professional and administrative	30,721	-5.93	-1.08
Maintenance of way and structures	44,913	-2.28	0.39
Maintenance of equipment and stores	39,592	1.05	-0.38
Transportation (other than train and engine)	11,142	-4.83	0.22
Transportation (train and engine)	62,072	-8.60	-0.94
Total–All Employees	**199,679**	**-4.13**	**-0.36**

Source: Interstate Commerce Commission-Office of Economics

[redacted]

1991 CLASS I RAILROAD WAGE STATISTICS

	No. of Employees →			**Service Hours →**			
	Middle of Month	Percent of Total	No. Paid During Month	Straight Time Paid For (1)	Overtime Paid For (2)	Other Allowances	Total
Executives, staff officials, and assistants	10.821	5.24	10.875	22.398.642	0	0	22.398.642
Professional and administrative	32.687	15.84	34.565	60.904.122	1.871.329	8.622.218	71.397.669
Maintenance of way and structures	43.206	20.93	46.377	79.106.407	6.834.699	11.683.448	97.624.554
Maintenance of equipment and stores	39.758	19.26	42.898	72.752.501	4.360.247	12.745.498	89.858.246
Transportation (other than train and engine)	11.632	5.64	12.728	20.824.939	1.311.561	3.985.043	26.121.543
Transportation (train and engine)	68.282	33.08	75.610	154,592.578	9.561.213	45.421.192	209.574.983
Total-All Groups	**206,386**	**100.00**	**223,053**	**410,579,189**	**23,939,049**	**82,457,399**	**516,975,637**

(1) Includes "straight time paid for" in train and engine service, and "time actually worked and paid at straight time rates" in other services

(2) Includes "overtime" in train and engine service, and "overtime paid for at punitive rates" in other services

Source: Interstate Commerce Commission-Office of Economics

meaning work rules, which have hurt their competitive posture. On the other hand, many unions would point out, especially in the airline industry, that it's the lowest-labor-cost carriers that are in the most dire financial straits. The issue should be addressed, with as much empirical data as can be supplied by all."

—Is there a better way? Pat Cleary thinks so, and "This is the way to find it. The process needs to be constructive, not just complaining about the status quo, but looking at alternatives to improve our current state of affairs."

Perhaps, he said, all concerned "will come to the decision that it ain't great but, like life, considering the alternative, it ain't so bad."

But a group such as he suggests could review other industries in the private and public sectors, and also examine how other countries treat the railroad and airline industries.

As for procedural steps, he calls for a six-to-12-month inquiry to provide the time "to think, to reflect, and to examine and discuss the options." He suggests that the Congress should not move to change the Act, absent agreement of the parties, who, if they can agree, "should lock arms and go to the Congress together—no amendments, no surprises." He also proposes that if a new way of doing things is developed, the parties "may want to test-drive it, if possible, by building in a review or requiring a reaffirmation by the parties after a decent interval, absent which we'd return to the Stone Age."

Then, Pat Cleary said something that, if it wasn't Churchillian, is about as close as you're going to come in this business:

"Beware of those who sow fear instead of reason. They will tell you not to get sucked into any such inquiry because the other side is poised to destroy you. I've heard it whispered by a small number on both sides, and it's insidious. There is no one more ignorant, in my opinion, than one who refuses to discuss, to air thoughts and differences, and to reason. I have found neither party is ready to destroy. All parties are troubled and concerned about the industries they serve. It is those reasonable men and women who will light the way for the rest. We need to get beyond the small and narrow band of folks who have an economic interest in the status quo, who have a stake in war, not peace."

Finally, Cleary told the Cooperstown Conference, in an inquiry, "All options should be considered, aired, critiqued, and we should come to closure on it. In the final analysis, it's just too important to these two industries, and to the nation's economy, for us to do nothing."

At the risk of alienating good friends who probably do feel comfortable with the status quo, let's just say that Pat Cleary's analysis and his proposal make more sense than anything that's been heard for years.

The opportunity is there. And now is the time to seize it. To wait is to invite a repeat of 1991 and 1992, perhaps with worse consequences, for labor, for management—and, most important, for the nation.

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Watching Washington

Congress weighs high speed funds; NHRIP on schedule

As Senate and House conferees try to hammer out agreements—on transportation and energy-related legislation, high speed trains are getting their full share of attention.

Almost certain to be approved in conference is authorization of around $200 million in capital funding in the new fiscal year for Amtrak's Northeast High-Speed Rail Improvement Project (NHRIP). That's less than the $220 million Amtrak was seeking, but the shortfall won't have any serious impact on the projects timetable.

What Amtrak has in mind is 150-mph trains cutting one hour off the present running time between New York and Boston. Amtrak will begin testing Sweden's X-2000 in the Corridor early in 1993. Talks are continuing with the builders of Germany's ICE for possible later tests of that train. Amtrak points out that the ICE is capable of speeds exceeding 150 mph "and would permit significant travel time reductions south of North York," where the Corridor has fewer curves. France's TGV is no longer in the running for Corridor tests, owing to financial considerations. Amtrak hopes to place orders early in 1994 for 26 trainsets at an estimated cost of $450 million.

What lobbyists for the High Speed Rail/Maglev Association have in mind are faster, more exotic systems, like the 200-mph TGV network proposed for Texas. After some early setbacks, these high speed partisans, too, have been encouraged by recent actions in Congress. The best news for supporters of very high speed systems came when Senators Steve Simms (R-Idaho) and Bob Graham (D-Fla.) led a successful effort to amend the Energy Bill to give high speed rail bonds the same exemption from federal taxes that airports now enjoy. The amendment was adopted despite vigorous opposition from Southwest Airlines. But the 55-40 vote was sufficiently close that its high speed/maglev supporters would only say that they were "cautiously optimistic" that it would survive conference.

The Senate also voted to restore funding for a maglev prototype program which was authorized by last year's ISTEA (Intermodal Surface Transportation Efficiency Act) but not included in House authorization legislation. That also went to conference last month.

Strong Congressional support for this and other high speed measures, said one lobbyist, "appears to be prompting the Administration to reconsider its lack of support of high speed ground transportation development."

Right now, the only high speed program that has official "project" status is Amtrak's NHRIP, and it's proceeding on schedule.

The two main components of the project are infrastructure improvements, including electrification of the line between New Haven and Boston; and acquisition of passenger equipment capable of 150-mph operations.

For the electrification, Amtrak has awarded a $296 million contract to a consortium headed by Morrison Knudsen. In a recent progress report, Amtrak said construction will begin in July 1993 "assuming the availability of funds and completion of the environmental impact analysis now being undertaken by the Federal Railroad Administration." The contract is to be completed in late 1996. Amtrak will spend an additional $25 million to complete the electrification, including connections to electrical utilities.

To accommodate the catenary system, clearances will have to be increased under many of the nearly 300 structures that cross the Northeast Corridor between New Haven and Boston. Amtrak has been conducting probe tests under structures that provide insufficient clearance to determine whether it is better to undercut the railroad beneath the bridges or to raise the bridges. The former is preferred, since it would have the least impact on traffic using the bridges.

Noting that some railroads and shippers have expressed concern over the impact of electrification on the future use of double stack and triple level cars, Amtrak says it "will work closely with the freight railroads, shippers and the states to avoid impeding future freight needs and to coordinate wherever possible with clearance improvements funded by the freight carriers."

Transportation authorities in Massachusetts, Rhode Island, and Connecticut have expressed concern about the impact of the electrification on their own future plans. This is a situation Amtrak is also addressing.

"As Amtrak and commuter services grow over the next two decades," says the progress report, "some capacity improvements will be required to accommodate the increased number of passenger trains. Additional sidings, storage and maintenance facilities, and stations likely will be required over time. Amtrak's goal has been to identify these potential needs now so that the electrification system design can be adapted prior to construction. In addition, Amtrak has met with state officials to determine how best to address and undertake bridge clearance and grade crossing projects.

"As part of this process, Amtrak has developed a sophisticated state-of-the-art train simulation model that can determine the impact on schedules and potential conflicts from real life intercity and commuter train operations.

"The model can identify bottlenecks and locations where additional sidings should be located."

NHRIP Components

Project	**Estimated cost ($ millions)**
Electrification	341.2
Signal upgrade	93.0
Track improvements	112.1
Bridge/structures	62.6
Bridge clearance	32.6
Station/tunnel improvements	30.5
Maintenance and yard facilities	20.7
Shell fly-over	70.7
Stamford center island platform	38.1
New Haven track reconfiguration	20.7
Cab signals	3.2
Proj. management	61.5
Total infrastructure	**894.1**
Equipment testing	4.0
Equipment acquisition	450.0
Total equipment	**454.0**

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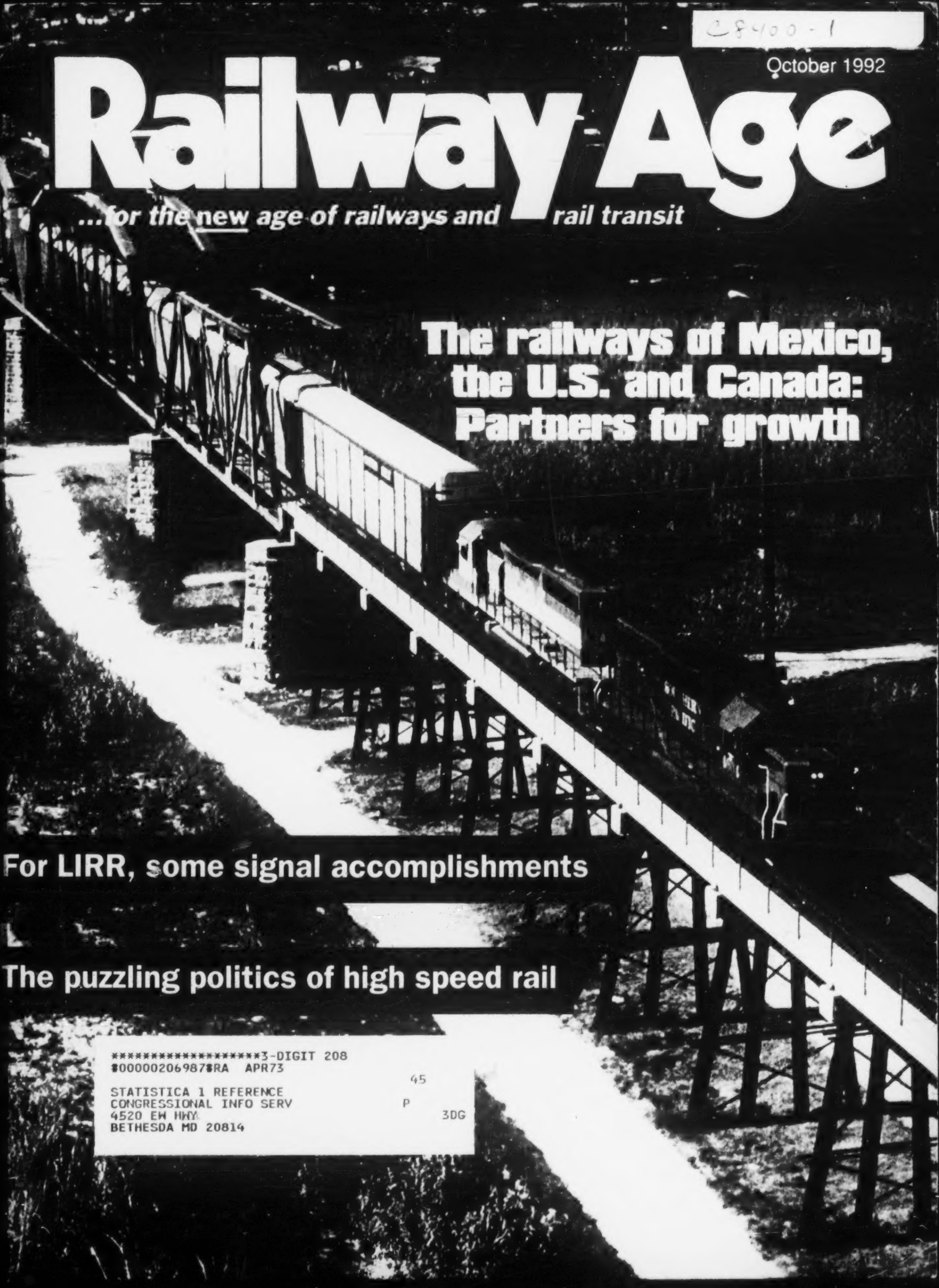

The railways of Mexico, the U.S. and Canada: Partners for growth

For LIRR, some signal accomplishments

The puzzling politics of high speed rail

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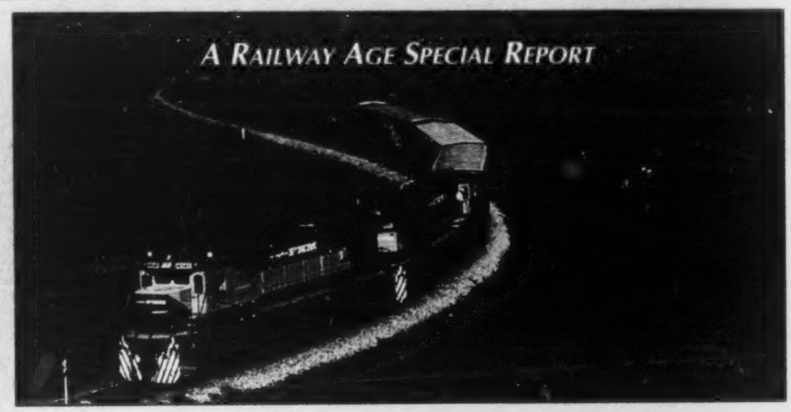

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Market Outlook

Equipment

Mexico City Metro: Awarded a $130 million contract for 135 subway cars to Construcciones y Auxiliar de Ferrocarriles (CAF), Spain. A losing contender for the order was Concarril, the carbuilding plant at Ciudad Sahagun near Mexico City, which Bombardier of Canada purchased earlier this year.

J. B. Hunt: Will invest an estimated $200 million in 10,500 new containers and 13,000 chassis.The first major trucker to enter into intermodal partnerships with railroads, J.B. Hunt now has working agreements with half a dozen rail carriers.

Facilities

Conrail: Placed an order with Video Masters, Inc. (VMI), a systems integrator and distributor for Amtech, for 56 AEI (automatic equipment identification) reader sites. VMI is supplying the RAILNET "APU-102" for this contract for both single- and double-track installations, making a total of 135 of these systems sold thus far.

Southern Pacific Lines: Placed an order with Digital Concepts for Digital Traffic Control for Denver & Rio Grande lines. Approximately 900 miles of ctc and 320 miles of direct traffic control will be operated from Denver.

Amtrak: Is installing Irfen Steel Palisade High Security Fencing and Gates along its lines in the New York City area to separate Amtrak track from adjacent public parks. Irfen Palisade has also been installed in recent years by the New York City Transit Authority, the Long Island Rail Road, and the Massachusetts Bay Transit Authority. Irfen offers several different fence and ornamental iron railing systems, among them the triad head system, employed by Amtrak, comprising sharpened edges and points on the top of each picket.

Buckeye Steel Castings: Placed a $3 million order with MTS Systems Corp. of Eden Prairie, Minn., for a testing system including servohydraulic actuators, electronic controllers, and software to control the testing process and analyze test results. The equipment is designed to help Buckeye improve the service life of its products while engineering components that are lighter weight and better performing.

Toronto Transit Commission: Awarded a $1.9 million contract to the joint venture of ICF Kaiser Engineers and PBK Engineering Ltd. to provide engineering and architectural services for the extension of the Spadina subway line.

National Railways of Zimbabwe: Awarded a three-year, $8 million contract (financed by the World Bank) to Canac International "to help transform the NZB into a customer-oriented transportation and distribution business, serving Zimbabwe and the Southern African region." The project will involve a team of 16 experts working in Zimbabwe. It will focus on management development, modern business processes, and the application of appropriate railway technology.

Revenue Freight Carloadings

Commodity	Sept. 12 week	Sept. 5 week	Aug. 29 week	Aug. 22 week
Grain	23,807	27,702	26,749	27,496
Other farm products	1,321	1,629	1,192	1,014
Metallic Ores	17,328	19,718	19,732	19,358
Coal	117,567	127,227	130,732	132,665
Crushed stone, sand and gravel	13,854	17,097	15,198	15,651
Nonmetallic minerals	8,067	8,825	8,875	8,438
Grain mill products	9,526	10,598	10,214	10,170
Food and kindred products	7,869	8,958	9,093	9,298
Primary forest products	7,849	9,247	9,076	9,190
Lumber and wood products	4,791	5,897	6,000	5,847
Pulp, paper and allied products	10,330	11,103	10,448	9,816
Chemicals	27,070	29,603	27,940	29,124
Petroleum products	5,301	5,903	5,757	6,032
Stone, clay and glass products	8,818	10,550	9,881	9,903
Coke	5,108	5,280	5,521	5,508
Metals and products	8,622	9,422	9,672	9,300
Motor vehicles and equipment	14,820	17,293	17,647	16,502
Waste and scrap materials	7,485	8,772	8,538	8,889
All other carloads	5,771	8,058	7,906	7,030
Total cars loaded	**305,399**	**342,882**	**339,811**	**341,231**
% change from previous year	-12.2	12.3	-2.6	0.4

		%change
Cumulative total: 37 weeks	**11,921,965**	1.2

Estimated revenue ton-miles	**19.4**	**21.8**	**21.6**	**21.6**
% change from previous year	-10.6	14.7	-0.5	1.9

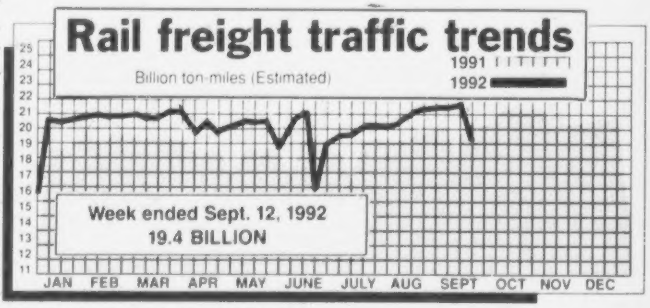
Total:	**1992**	**1991**	**%change**
	749.7	**728.7**	**2.9**

Intermodal Traffic

	Sept. 12	Sept. 5	Aug. 29	Aug. 22
Trailers	58,830	73,835	67,488	67,045
Containers	57,955	69,328	69,623	68,155
Total	**116,785**	**143,163**	**137,111**	**135,200**
%change from previous year	-10.7	29.2	4.6	6.6

		%change
Cumulative total: 37 weeks	4,630,478	7.3

Source: Association of American Railroads



Source: Association of American Railroads

New Zealand Treasury: Awarded a contract to A. T. Kearney to assist in privatizing the New Zealand Railway system. In the first, evaluation phase, Kearney is working with CS First Boston NZ Limited.

Tie Collar, Ltd.: Received a $120,000 contract from the Iowa DOT to build a grade crossing in Pella, Iowa, on track owned by the Iowa Interstate. Tie Collar also has a contract from the Illinois DOT for rehabilitation of a Belt Railway of Chicago crossing in southwest Chicago.

If management and labor chiefs got together. . .

Gus Welty

It's a given. You don't fight with the guy who owns the printing press, who buys his ink by the tank car load. But don't tell that to the Brotherhood of Locomotive Engineers. The BLE is asking the AFL-CIO to declare a boycott against USA Today because of the newspaper's handling of the 1992 strike-lockout story.

In a letter to AFL-CIO President Lane Kirkland, BLE President Ron McLaughlin called for this action, charging that in the coverage by the second-largest daily-circulation newspaper in the country, "The victims were portrayed as the villains."

The BLE, McLaughlin wrote, "went the full nine yards to wire, phone, fax and educate the USA Today reporters who were covering the event—before, during and after. The reporters indicated in every instance that they understood the difference between a national lockout and the single, limited strike by the International Association of Machinists."

The reporters, McLaughlin wrote, "knew that the BLE and other unions weren't simply spinning a semantic fantasy."

But, BLE's president told Kirkland, the newspaper reported "that strikers were why commuters and Amtrak passengers were being stranded and valuable crops were rotting in the fields. Our public relations department immediately confronted one of the reporters, who admitted that although the important fact was understood—that the national rail service shutdown was created by a lockout—by the time reporters' stories were published, the reporter said, 'Someone else puts their fingerprints on them.'"

Ron McLaughlin then quoted from an editorial which he said "confirmed the suspicion that the newspaper's goal was to report the situation falsely to its readers." He called upon Kirkland to institute a boycott until USA Today "publishes an apology to our nation's unionized railroad employees."

USA Today reprinted part of McLaughlin's letter to Kirkland, though not the parts that seemed to raise questions about the newspaper's integrity.

OK, let's look for a moment at integrity. If you've been in the reporting/writing business for a while, you know that if the boss has certain viewpoints, they may be reflected in the way things are reported. It shouldn't happen, but it does.

This column, "Lines on Labor," has appeared for more than 20 years in *Railway Age*. It has been critical, at times, of rail labor. It has also been critical, at times, of rail management. We get cards and letters, some critical, but more saying "Right on" in what has been a continuing effort to promote positive joint efforts involving rail management and rail labor.

When you're older than dirt and you've been through a few editors and publishers and not a one of them has said "Hey," maybe what you're writing smells right. Labor costs, despite all the employment reductions and writeoffs and so forth, still account for upwards of 40% of total railroad operating expenses. And there's nowhere but in *Railway Age* to get the feel of what's happening—forget smell, make it feel.

There are a lot of new leaders in rail labor today. Not all of them are well-known, even to the management people who have to deal with them. One new union leader in particular is looked at with trepidation, the new guy heading the Transportation Communications Union. But there is at least one chief executive officer out there who has found Bob Scardelletti reasonable to deal with, one-on-one, and the problem this CEO has is not with the union.

And ain't it so often the truth? If you have the need to plunge ahead, sometimes you find that the perceived enemy can be a friend—and your perceived friends turn out to be perhaps something else. What was it that the late Walt Kelly had Pogo saying? "We have met the enemy, and it is us."

With several years to go until the next round of negotiations, perhaps it's time to go back to something which Burlington Northern's Lou Menk promoted 20 years or so ago—meetings among chief executives of railroads and unions, not to negotiate but rather to study and discuss mutual problems. Of course, negotiators on both sides opposed those meetings, figuring that only they had the smarts to outwit the guys on the other side of the table, and that the CEO-types would give away the store.

Bullbleep. If the railroads hadn't gone full-bore into crew-consist reduction, and if the United Transportation Union had not then issued its own declaration of war, meetings might still be going on.

Today, railroads have obtained much of what they wanted, going back 20, 30, and even more years ago, in terms of reducing employment and making operations more efficient. It's hard to say what the carriers will want in the 1995 round of bargaining. It's not hard to say what the organizations will want, with job stabilization perhaps leading the way even ahead of demands on economic issues.

No surprise there. This is an industry in which employment has gone down almost faster than the eye can

Continued on page 98

CLASS I RAILROAD EMPLOYMENT

	July 1992	% of change from: July 1991	June 1992
Executives, officials, and staff assistants	11,426	5.17	1.66
Professional and administrative	30,712	-5.95	-0.03
Maintenance of way and structures	45,285	-1.06	0.83
Maintenance of equipment and stores	39,303	-1.19	-0.73
Transportation (other than train and engine)	11,021	-6.50	-1.09
Transportation (train and engine)	61,949	-8.88	-0.20
Total–All Employees	**199,696**	**-4.38**	**0.01**

Source: Interstate Commerce Commission-Office of Economics

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Lines on Labor

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follow. It's also an industry on the rebound, one in which employment could also rebound.

There are the old problems, of course—12 separate unions in an industry with declining employment—and all of the dumb rivalries that this creates.

But you don't call it "dumb" when you're talking about a union leader's job. He may see his members drop by the wayside, but so long as he has his job. . . .

OK, that's cynical. But isn't it realistic?

Here is an industry, still fighting for its life, and having to deal with its employees on irrational bases, based mostly on the understandable desires of union leaders to keep their jobs. One problem, of course, is that the leaders were elected to represent the members, not to enjoy some sinecure.

We've come a long way from talking about the BLE's asking the AFL-CIO to declare a boycott against USA Today.

But maybe not really.

What we're talking about is honesty, integrity, people leveling with people.

OK, it's just a thought. But what might happen if rail management and rail labor chief executives got together again, in the interim before bargaining has to begin again—not to discuss bargaining issues, but to discuss the things Lou Menk had in mind, issues that transcend labor-management bargaining and have to do with the industry's future, for employers and employees alike?

Unfortunately, there are still a few Neanderthals in the labor-relations business. But there aren't many, and their time will be going. Labor's new leaders are worth a shot at going after.

There's time, now, to get a new dialog going. But it's rail management's job to get that dialog to happen. It's rail management's job to get morale to happen again—in an industry that, years ago, didn't have to worry about "morale."

A friend, a conductor, is a third-generation railroader. Railroading is what he wants to do. But he doesn't know that his employer wants him to do it. With each new agreement, he says, his lot in life gets a little worse.

He's happy with neither his union nor his employer.

That's a sad situation, but it's not unique. Any ideas for improvement?

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